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Women's Building and Home Economics Department, Agricultural College of Utah.

(For description see October, 1910, JOURNAL, p. 443.)

THE
Journal of Home Economics

VOL. IV. APRIL, 1912 NO. 2

A PLEA FOR THE INTRODUCTION OF HISTORICAL COURSES ON THE HOME INTO HIGHER SCHOOLS AND COLLEGES FOR YOUNG WOMEN.[1]

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Almost sixty years ago, Herbert Spencer, in his oftquoted treatise on *Education*, voiced part of his criticism of the intellectual training of his day in the following words:[2]

> If by some strange chance not a vestige of us descended to the remote future save a pile of our school-books or some college examination papers, we may imagine how puzzled an antiquary of the period would be on finding in them no indication that the learners were ever likely to be parents. "This must have been the curriculum for their celibates," we may fancy him concluding. "I perceive here an elaborate preparation for many things: especially for reading the books of extinct nations (from which indeed it seems clear that these people had very little worth reading in their own tongue); but I find no reference to the bringing up of children. They could not have been so absurd as to omit all training for this gravest of responsibilities. Evidently, then, this was the school course of one of their monastic orders."

Now, although Spencer doubtless had in mind the training of future parents in hygiene, physiology, child-psychology, and ethics, his words are equally true and pungent when applied to our present failure to give instruction concerning the origin, historical development, economic and educational functions of the home as a social institution performing a unique public service. Two generations have passed away since Spencer made his vigorous plea for education in parenthood,

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

[2] *Op cit.* (Burt ed.), pp. 44, 45.

yet still our women's colleges are wedded to a curriculum largely traditional and academic. To be sure, professional and technical schools have sprung up which give valuable training in cookery, in household chemistry, in dietetics, in textiles and their manipulation. Here and there material is presented bearing upon the wise and effective expenditure of income to secure the most nourishing food, the best clothing materials. All this is good, and bears more or less directly upon the problem of home-making. But few of our eastern colleges and finishing schools for women have introduced these courses, perhaps because they elect still to regard them as illiberal. And even in those professional schools and state universities where ample recognition is afforded domestic science and art, I submit that it might be quite possible for a young woman to pass through courses of instruction in these subjects without carrying away an enlarged vision of their relation to the problems of the modern home. Even if it be conceded, for purposes of argument, that the student *does* see the application of much that she studies to the large question of home-making, and is intelligently interested in this aspect of the subject, it still remains true that such technical courses cannot supply all the knowledge which seems essential if young women today are fully to appreciate the meaning of parenthood and home-making in this twentieth century.

On all sides at the present time are heard predictions that the family and the home—at least in their present form—will ultimately disappear; that disintegration, as revealed in the rapid increase of divorce and family desertion, as well as in the decrease of the marriage rate among young men and women of the upper middle, professional, and working classes, is so rapidly proceeding that the monogamic family must be either reconstructed or abandoned. Economic pressure is preventing the establishment of homes on the one hand and is interfering with their proper management and oversight on the other. Closely bound up with economic causes is the awful fact of prostitution which is responsible for the wreck of thousands of promising homes.

The spirit of individualism, born of the great Enlightenment of the eighteenth century, and animating first only the men, has gradually stirred to eager life the women of the race. These women, so recently and incompletely emancipated, were, in the first thrilling joy of freedom (partial though it was), perhaps more individualistic than the men. Their assertion of personal rights, their eager claim to the full development of personality, natural as it was and is, has, no doubt, further complicated the already baffling problem of the maintenance

of harmonious and enduring family life. But, it should promptly be added, that nothing in modern life is more significant than the awakened social spirit of the women of today. More clearly than do men, if we may judge by current social literature, they appreciate at least some of the phases of the complex questions concerned with the modern home. Ellen Key, Selma Lagerlof, Helen Bosanquet, Olive Schreiner, and Elsie Clews Parsons, women of broad intellectual grasp and vital moral purpose, have each pointed out in their writings one or more of the factors that enter into this present-day problem and have offered solutions or suggestions of varying worth.

Yet, although the issue is rapidly becoming a burning one, no hint of it is reflected in the academic or professional work of our higher schools and colleges. It is as if we thought our institutions of learning were especially designed to turn out classicists or research workers in history and science, or teachers of household arts and allied subjects to girls who themselves are preparing to be teachers. Nowhere in the scheme is there any explicit recognition of the fact that a large percentage of the young women graduated—at least from the colleges of liberal arts—will, before many years, become home-makers and in all probability be confronted with knotty situations for the untangling of which they are but meagerly prepared.

How may we account for this indifference, apparently shared by all classes of educators? In the first place, it is largely due to the proverbial inertia of any long-established institution like education which has staked out its field and developed its methods. But perhaps as important a contributing cause may be found in the fact that, although social self-consciousness, if I may use the expression, has been rapidly gaining ground since Auguste Comte coined the word "sociology" and outlined its problems, yet society has only very recently been willing to turn this self-analytical, self-critical spirit upon its favorite institution, the family. Only a few years ago, when a storm of criticism was directed against Mrs. Parsons' book on *The Family*, because it merely suggested that modern unsatisfactory conditions as regards marriage might authorize the experiment of trial marriages, Professor John Dewey remarked to a class of graduate students that the one institution which society was as yet obviously unwilling to subject to calm and critical analysis was the family. And this reluctance is not difficult to understand. With marriage and the family the heart-strings of most of us are interwoven. Our deepest and most sacred memories are bound up with home, father, mother, husband, children.

Yet, within the last five years, the change in attitude of intelligent men and women toward this matter is truly remarkable. The problems concerned with the family and its successful maintenance, both from a personal and a broadly social viewpoint, are being investigated and discussed not only with earnestness but with hopeful evidences of scientific spirit and method. It may, then, be hoped that, before many years, inertia and prejudice will have given way, and courses on the origin, history, and present-day conditions of the family will have become the subject of impartial and searching study in higher schools and colleges.

Such a course, although as yet too brief to be entirely satisfactory, has been introduced into the curriculum of the School of Household Arts of Teachers College. The purpose of the course, as the writer has conceived it, is fourfold: First, to assist the students in perceiving how present conditions, customs, and ideals have come to be, and in appreciating how deeply they send their roots back into antiquity; secondly, to use this historical knowledge as a basis for understanding the present situation of the home in its economic, social, moral, and educational aspects; thirdly, to arouse in every young woman a sense of the dignity of the home and of the enormous social service it has always rendered—a service to which women have been by far the largest contributors, since they have built up the family through maternal love and chiefly sustained it by their daily care and sacrificing efforts in the one sphere allotted to them; and fourthly, to awaken in the students an alert and dynamic interest in all modern questions concerning the family and its functions, an interest which shall lead them to continue their study and inform themselves widely on these matters, after the course is concluded, and to ally themselves with such sane and wholesome movements as may develop for the improvement of the present situation.

In the first place, the Teachers College course is genetic, endeavoring to preserve some degree of historical continuity, although this is not always apparent. Yet it is quite possible that under different conditions the idea of continuity might well be sacrificed to some other guiding principle which more satisfactorily met a specific situation and need. For example, in talking over the organization of a historical course on the home for young women who were preparing to go out as social workers among a factory population largely foreign, it seemed best both to the prospective teacher and myself to make a study of past and present family life and ideals among Bohemians,

Russians, Poles, Italians, and other European races. Such an approach would manifestly be better adapted to the needs of this group of students than the one pursued at Teachers College.

In the course as given in the School of Household Arts a beginning is made with the primitive family. The origin of marriage and the family, the different forms they assume among various savage peoples, the status of women and children, the loose character of the marriage tie leading to frequent divorce, the economic function of the family in primitive society, and its further social service as an educational agency are particularly emphasized. Such a study should make ample use of the accounts of reliable anthropological writers and travelers concerning the types of family existing today among groups very low in the scale of civilization, such as the Australian aborigines, the Veddahs of Ceylon, and the Fuegians of South America. The students may be led to perceive the principle, so convincingly maintained by Westermarck, Fiske, and others, that marriage, in the sense of a union of the sexes persisting beyond the birth of offspring, is an outgrowth of the family, not the family of marriage. The sex instinct alone furnishes too unstable a basis for an enduring family relation; whereas the helplessness of the human infant, together with the great fact of maternal love, and the need of both mother and father in the protection of the child during a period of varying length have been the potent causes of the development of home and family. Such a principle, once clearly perceived, may be judiciously utilized as a standard by which to estimate the function of the family in this twentieth century. If marriage in its origin grows out of the needs of helpless offspring, it is not unreasonable to assume that the procreation, nurture, and education of children is the primary function of the family today. I am quite aware that there are individuals who will contest this point and maintain the right of every man and woman to the full completion of his or her life through marriage, even though this union be designedly unfruitful. But fortunately for society this conception of marriage is at present confined to a small though probably increasing minority. Students who once fully appreciate that the family is a social institution not alone furnishing to society the raw material of its future citizens, but training these unformed natures in harmony with usages and ideals sanctioned by social experience, have gained an insight into the dignity and meaning of the home which will guide their thinking and their conduct with regard to the whole problem of the family.

The primitive family illustrates how material apparently remote

from present-day life may be made to furnish its quota of valuable suggestion for the understanding of modern conditions. The Hebrew, Greek, and Roman families illustrate in varying degrees the patriarchal type in which the father, or the oldest male member in the male line, is the undisputed and reverenced lord of the household, including servants and slaves. The relation of the patriarchal family to pastoral life, its connection among the Greeks and Romans with ancestor worship, the status of women and children in these varying types of patriarchal family, and the influence of this status upon home life and education are a very few of the topics which may be discussed. The evidences in Genesis and Deuteronomy of marriage by purchase and by service among the Hebrews are clear enough, although in the age of the Talmud the latter had disappeared and only the symbols of the former remained. The changing status of the Greek woman from Homeric times to historic, her relative freedom and dignity in the earlier age, and her degradation almost to the Oriental level in the later, form material for interesting and suggestive study. The use of source material in working out a conception of Greek family life cannot be too strongly recommended. The *Iliad* and the *Odyssey*, in the admirable translations of Andrew Lang, furnish fascinating material from which to deduce conclusions as to the family of the Homeric age. This early account may be contrasted with the picture drawn by Xenophon in his *Economics* of the position of the Greek wife in the fifth century B.C. when she had become little else than a housekeeper in the narrowest sense, with too little education to be a companion to her husband or an efficient mother to her children. The *Electra* of Euripides, in the delightful translation of Gilbert Murray, affords yet another contemporary picture of sex relations and family ideals in the same period.

When we turn to Rome, the purity and dignity of the Roman woman in the early stern and simple period, the admirable character of the home as the school of practical arts and moral and civic virtues, may be contrasted with the low ideals of marriage, the prevalence of divorce and adultery, the marked decline in the educative influence of the home, so characteristic of the late Republic and the Empire. Probably, as Professor Ferrero has suggested, a striking parallel could be drawn between imperial Rome and the American republic of today. Apparently there was much the same emancipation of woman then as now, followed by her eager participation in public affairs. Then, as now, education had largely passed from the home to the schools.

Marriage had always been a civil contract in Rome, in which neither State nor religion interfered. Today marriage has become largely a civil matter, despite the age-long hold of the church upon it, and there are not lacking individuals who prophesy that in the future it will once more take its place as a purely personal concern. Finally, the laxness of the marriage-tie, the decline in the birth-rate, and the low moral ideals too prevalent among the wealthy and leisure class are as characteristic of one civilization as the other.

With the introduction of Christianity came the warfare of the church against abortion, infanticide, and the divorce evil. But the student should be led to see how very gradual has always been the work of substituting new ideals for old customs. In the age of Justinian, divorce was still largely a personal matter even among professed Christians and it so remained until the ninth century. In connection with this early Christian period one fact more may be touched upon very briefly. The attitude of the western Church Fathers, Tertullian, Jerome, and Augustine, toward marriage was so hostile, their conception of the marriage state as revealed in their writings so ignoble, that a blow was struck at the family from which it had hardly recovered at the age of the Renaissance.

Passing rapidly over the Middle Ages, I shall suggest only a very few subjects from the wealth of material for fruitful investigation offered by this period. The half barbaric marriage customs and ideals prevalent among Teutons, Franks, and Anglo-Saxons, before and for some time after their conversion to Christianity, offer interesting subjects for study. Evidences of marriage by purchase are clear enough in the old folk-laws prior to the ninth century. Payments of money or land or cattle to the father of the bride before marriage and later the famous "morgen gifu," or morning-gift to the wife on the morning after the marriage-night, point unmistakably to the earlier purchase of the wife, although probably this need not be interpreted to mean that she was regarded as a mere chattel. Marriage in these rude days was a private contract between the parties concerned into which little or nothing of a religious element entered.

But marriage does not remain a lay matter throughout the Middle Ages. The history of the gradual intervention of the church in the marriage ceremony makes a suggestive field of study. Yet it was not until the Council of Trent, which sat from 1545–1563, that all marriages not contracted in the presence of a priest and two or more witnesses were declared void. The independent British Isles, however,

refused to accept this decree with the result that the private, contractual marriage, the present day "common law marriage" was valid in that country until 1753. Perhaps it is not generally known that "common law marriage" is still regarded as valid and binding in several of the states of our Union.

Perhaps the most valuable topics in the whole vast field of the Middle Ages are concerned with the home as an economic institution. A sharp sex division of labor, giving to men the spheres of warfare, tillage, and management of feudal estates, and to women a vast variety of household occupations, was widespread. Women in those days were producers and manufacturers in a very real sense. The flax industry was entirely in their hands, from the sowing and harvesting of the flax to the manufacture of household linen and garments from the spun and woven threads. So with the wool industry until late in the Middle Ages. Every woman, high or low, knew how to card, spin, weave and dye cloth, and the homes were hives of industry. Wright, in his delightful work entitled *Womankind in All Ages of Western Europe*, states that there is ample evidence to show that women served not only in the capacity of midwives, but as physicians and surgeons throughout a large part of the Middle Ages. Their empirical knowledge of medicinal herbs and their preparation and use was handed on to the women of Post-Renaissance days. From these facts and many others the student may be led to appreciate the important economic contributions of wives and mothers throughout these centuries, and the lack of correspondence between their inferior social and legal status and their productive services.

With the Renaissance came the abandonment by Protestants of the Catholic dogma of marriage as a sacrament and the gradual substitution of Luther's idea of the family as the unit of the social structure, in which the God-fearing father and mother appear as the most valuable assets of the state. The position of women in the home slowly improved with the advance of civilization. Dominant women were not unknown in the Middle Ages, but during the Renaissance centuries we are struck by their number and influence. Elizabeth of England, Marguerite d'Angouleme, described in her epitaph as "Queen of the Muses," Isabella D'Este and Vittoria Colonna, friend and adviser of Michel Angelo, are but a few of this shining band of cultivated and forceful women.

After the general effects of the Renaissance upon woman and the home have been treated, a selection from among the mass of material

relating to the homes of the seventeenth, eighteenth, and nineteenth centuries becomes imperative. Not all European countries can be considered, nor can America, from colonial times to the present, receive thorough treatment. Therefore it has seemed best to limit the field to a cursory study of England and the United States, since the influence of English common law and family customs upon this country is unquestioned.

Sixteenth century England reveals the husband still the unquestioned head of the household and its members. As yet the housewife has few privileges and many cares. Yet there is clearly a tendency to educate the daughters of the nobility and well-to-do gentry in the whole circle of the liberal arts. Queen Elizabeth, Lady Jane Grey, and the daughters of Sir Thomas More are not the only instances of liberally educated women that the period affords. This and the succeeding century are marked by a great improvement in the architecture and furnishing of English homes and in consequence a gradual refining of home life. "Books of courtesy," laying down detailed rules of etiquette for meals and social gatherings, become quite numerous in the fifteenth and sixteenth centuries and serve a valuable purpose in the refining of manners. Even the homes of the burgher class show many of the comforts, conveniences, and even elegancies of life. This is the age when domestic industry undergoes modifications which are prophetic of the industrial revolution. The cloth-making and stocking industries become prominent owing to the influx of Dutch and French weavers with improved implements. Manufacturing, to be sure, is carried on in the homes, but there is greater division of labor, control is exercised by a master outside, who rents out implements in the stocking and silk manufacture and pays employees. Moreover certain industries are being drawn from the control of women to be taken over by men. Baking, brewing, candle-making, tailoring, milling, and cloth-manufacturing, are no longer exclusively home industries. Slowly mediaeval England is becoming modern and the homes reflect the change in ideas and customs.

These modern tendencies are far more evident in the seventeenth century when the home emerges as a strong and unified institution. The century is marked by the greater unity of husband and wife, growing out of the encouraging tendency for marriages to be based on mutual love and respect. Yet the husband legally retained full control over the wife, although in many homes the right was probably not exercised with harshness. The English household in the seven-

teenth century was highly organized; servants were regarded as part of the family and received moral and religious instruction much the same as the children. The English wife spent the bulk of her time in supervising the varied activities of her household which, in the country at least, was largely a self-sustaining unit. The educative influence of the home was very noteworthy. Religious and moral education tended to pass rather more from church to home than was the case in the Middle Ages. Family prayers, attended by the entire household (often including field hands), daily home instruction in religion and morals, were characteristic of many households—even outside the Puritan sects. Discipline was severe, even harsh, although there are evidences in many homes that this severity was relaxing and giving place to gentler methods. Outside of moral and religious training, the education of woman was still largely determined by her future sphere which was universally conceived as marriage and housewifely duites—both in England and America. Parental power was still almost absolute in respect to the marriage of children, although daughters who dared to rebel were allowed right of veto and in some instances of choice. To be an old maid was a fate few women aspired to in those days when woman's only field of honorable activity lay in the home. The whole family, including near relatives, were often actively concerned in marrying off some luckless damsel whose dowry was too small to attract suitors, and who thus was confronted with the truly mournful fate of a dependent in the homes of her reluctant kin.

When the eighteenth and nineteenth centuries are reached, the most pregnant topic for discussion is of course furnished by the industrial revolution with its resulting transformation of domestic industry and home life. With the development of mineral resources, the beginnings of capitalistic labor, the substitution of machinery for hand work, the household as the unit of production tended to disappear and the old stability of economic life was threatened at its root. Men, women, and children, formerly independent workers in the home, became, under the rapidly expanding factory system, mere "hands," entirely dependent on the wages doled out by capitalists. The decline of home apprenticeship and the extension of poor relief were the immediate results. But these economic changes led to far-reaching transformations in the integrity and influence of the family in both England and America. At this time and during the whole of the nineteenth century wives and mothers, needed to maintain the home, were drawn into the current of industry. In the English textile industry alone,

between 1841 and 1891 the number of males increased 53 per cent, the females 221 per cent. The result was inevitable; the old, sturdy home training declined, the family tended to disintegrate into a number of units representing independent wage-earners, who sleep and eat under one roof but have less in common than ever before. The influence of parents upon offspring perceptibly decreased, not only because the children early became economically independent, but also because the parents had too little time during their early childhood patiently to shape and influence their lives and characters.

Other significant tendencies of the nineteenth century which call for treatment are concerned with the very gradual extension of larger property rights to women, leading, in England, to the Married Women's Property Act of 1882. Contemporary with this was the movement looking to the broader and more liberal education of young women. The girls' boarding schools, so popular in the eighteenth century, which bestowed a smattering of music, French, embroidery, and manners upon conventional young misses, trained to meet the artificial ideal of clinging womanhood current in that conventional age, gave way in time to more substantial types of schools. By the middle of the nineteenth century the individualistic movement of the age of Voltaire and Rousseau had made itself felt even in the lives of women. Colleges for women—Queens in 1848, Bedford in 1849, Girton in 1869, Newnham in 1871—offered rich and broadening courses to English girls; and similar institutions developed in America, beginning with Mount Holyoke College, opened as a seminary in 1837. In connection with this movement the students of the course should be led to consider how far this intellectural emancipation of women has influenced marriage and home life at the present time. Is there ground for the assertion so glibly and frequently made that a relatively small proportion of college bred women marry? Finally, a fruitful subject for the students' investigation would be the legislation affecting the social and legal status of women in Europe and America, since this has a very obvious bearing on family life and relations. The tendency to put women into full possession of their own property and earnings, to make them equal guardians with the father over their children, to establish *in theory and in law* although not in public opinion, the single standard of morals, to grant equal divorce rights to husband and wife, to advance the "age of consent," and to increase the penalties for rape and seduction are only a few of the modern movements designed to grant protection to young girls, and to secure for wives and mothers

those tardy rights which indicate their admission to the ranks of free individuals with personalities to be reckoned with.

This review of the course may, perhaps, serve to make plain one guiding principle which should animate the whole work. How far does this material help the student better to understand certain customs, attitudes, ideals that play a prominent part in modern marriage and family life? If the facts and principles under consideration seem at present to *lead nowhere*, however curious and interesting they may be, such facts should be relegated to the background. There is ample suggestive material shedding light on the more immediate past and on the living present, with its urgent problems and needs, to justify the application of this drastic principle. Moreover the course covers the history of civilization in one important aspect, and time is all too brief for its demands.

In conclusion, I shall indicate, very briefly, the lines along which the analysis and study of present-day family conditions might proceed. As has been suggested at the beginning of this paper, the family of the twentieth century is in so unstable and fluctuating a state as to suggest its radical reconstruction if not its ulitmate disintegration. Of course the most noteworthy feature of family life today is the increasing prevalence of divorce, which reveals a rate of increase far greater than that of the population. According to the special *U. S. Census Report on Marriage and Divorce* published in 1909, the divorces granted in the decade 1890–1900 increased 66.6 per cent over the preceding decade; while the rate of increase of population for the same period was only 20.7 per cent. Apparently for every 15.6 native marriages celebrated in the United States one is dissolved by divorce; and this melancholy proportion would be one divorce to 13.9 marriages if over 100,000 divorce cases had not been thrown out because the court records did not declare the place of marriage of the parties.[3] Surely these facts reveal a condition calling for the intelligent understanding of educated young women.

Of all causes for divorce in the United States, desertion is by far the most frequent, furnishing, according to the Census Report, 38.5 per cent of all assigned causes in the years between 1902–1906. So pressing an evil has this become, so fruitful a source of blighted homes, that the Associated Charities of Boston, Philadelphia, Washington, and New York have conducted investigations into the matter and have published

[3] *Op. cit.*, Part I, pp. 22–24.

reports which seek to discover the extent and causes of family desertion. The publication of the Charity Organization Society of New York on Family Desertion states that "the usual deserter is not a man who is physically weak or ill and discouraged, nor desperate because of bad housekeeping or his wife's ill-temper; he is a young, able-bodied man, who leaves because he is well able to take care of himself and desires to indulge a selfish or vicious impulse, or to avoid ordinary cares or some unusual trouble. Desertion, therefore, indicates a serious moral defect."[4] Again this would appear to be a subject in which young women educated for full social membership should be intelligently interested and informed.

Among the numerous hostile forces at work to undermine family life today none is more insidious and terrible than that ancient evil of prostitution. The reports of the Chicago and Minneapolis vice commissions make clear enough the widespread character of this institution as well as the existence of an organized traffic in vice involving the lives of thousands of ignorant girls. The close relation between vice and economic conditions can no longer be ignored by serious men and women. Fifty-nine per cent of all young women in the United States between the ages of sixteen and twenty are employed in some gainful occupation. Girls in stores and factories, living on a weekly wage of six dollars or less, may easily learn that disreputable women have an earning capacity more than four times greater than their own. And many of these girls are adrift from home restraints and influences. In the words of Jane Addams, "at the present moment no student of modern industrial conditions can possibly assert how far the superior chastity of women, so rigidly maintained during the centuries, has been the result of her domestic surroundings, and certainly no one knows under what degree of economic pressure it may give way."[5]

But prostitution does not confine its debasing influences to the wage-earning class. The evil has extended its tentacles into all classes of society, too often bringing disease and disillusionment to the wife and an inheritance of bodily infirmity or permanent blindness to the innocent offspring. These are subjects we do not enjoy discussing even if we do not wholly condemn their discussion: yet they are intimately bound up with the matter of wholesome and happy family life, and it is highly doubtful whether we as students of the family as an institution are justified in longer turning our backs upon them.

[4] *Op. cit.*, p. 9.

[5] A New Conscience and an Ancient Evil, *McClure's Magazine*, December, 1911, p. 232.

Another active factor in the present unsatisfactory condition of family life lies in the participation of large numbers of married women in industrial and professional life. The deplorable effect of the removal of wife and mother from the home during the long working day is apparent in every country of Europe and America. The crêche in France, the day-nursery in America, represent public attempts on the part of an awakened society to fill the breach and supply something of the care and oversight of the true mother in the home. It seems clear enough that this need for the daily wage which the woman can add to the family income is not the sole cause of the enormous influx of women into all forms of gainful employment. The inevitable result of the intellectual and economic emancipation of woman has been her eager desire to share in the world's work, to shoulder her portion of the labor and thought, the aspiration and effort which are the price we must pay for the betterment of human life. Shall she or can she be excluded from active participation in professional life, from assuming her full share of the social burden, from taking active part in all movements looking to the improvement of the conditions under which some or all of us live? Students should be led to appreciate the complexities of this problem in its full bearing upon the future of the home and of family life.

But the last word in a historical course on the home should not be an analysis of present-day menacing conditions. What can be done by earnest men and women to initiate a better state of things? At this point the instructor may, perhaps, do the most helpful, because the most constructive and vital work of the whole course. The solutions offered by such social writers as Professor Howard, August Bebel, Ferrero, and others for some of the problems of modern family life may be presented and discussed, pro and con. For example, the question of the enormous increase in divorce may well lead to a consideration of such remedial measures as the greater restriction of marriage under conditions fixed by the state, the securing of uniform marriage and divorce laws throughout the Union, and the education of adolescent boys and girls in the higher social meaning of marriage and the family. Indeed the matter of the sex education of boys and girls can hardly be much longer ignored by educators. The home shows an increasing tendency to shunt this added burden to the shoulders of the school. Fathers and mothers with a prudishness hard to condone, too often resolutely shut their eyes to their children's need of wholesome instruction in the facts of reproduction. Shall the school,

then, organize courses in nature study, in biology of a simple sort, and in physiology and hygiene specially adapted to young men and women in the adolescent period? If it be urged by the students that parents can more effectively give this instruction, then the problem shifts. How can the school get hold of fathers and mothers, give them the knowledge which they lack with surprising frequency, and arouse within them a sense of the importance of furnishing their sons and daughters, at the critical time, with the information and guidance so essential to their future well-being? Let the students, if possible, fully appreciate the need of sex education in its broadest sense, and then lead them to think upon and freely discuss means and obstacles.

The same question comes up again when the subjects of family desertion, the production of offspring far beyond the family means, prostitution and their remedies, are discussed. Indeed, if by one means or another, the coming generation could be made fully to understand the supreme value of sexual self-control, for the individual and for the community, the dignity and seriousness of marriage, and the essentially social function of the family and the home—a function which no other institution yet evolved can in any degree perform—it would seem as if a long stride had been taken in solving the whole baffling problem of the family. And, with the discussion of this burning educational issue, upon which the future of the home so largely depends, the course may well come to an end.

BIOCHEMISTRY: ITS PLACE IN THE CURRICULUM OF THE COLLEGE OF LIBERAL ARTS FOR WOMEN.[1]

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It is with pleasure that I come here to plead for a place for biochemistry in the college of liberal arts for women. I am in hearty sympathy with the recent action of a branch of the Association of Collegiate Alumnae in urging the introduction of Home Economics into our colleges for women. In 1883, Mrs. Richards was the prime mover of the Sanitary Science Club, a group of women who felt the need of study of this kind and who declared in the introduction to the book which they published later that the "expenditure of time and effort had been amply repaid by positive and satisfactory results." I studied sanitary chemistry with Mrs. Richards at the Massachusetts Institute of Technology, and was associated with her on a committee appointed from the Women's Education Association to devise a working program for a manual training school for girls in Boston. Our object was to make women efficient in their own domain, efficient at home, and we believed that, with the new knowledge which research had made available, training was necessary if this knowledge was to be diffused. It is instruction along these lines which our alumnae are now urging upon the trustees and faculties of our colleges. Classically educated myself, I got my first stimulus from Mrs. Richards for the work which has been a continuous happiness to me.

Dr. Charles W. Eliot, in an address before the Association of Collegiate Alumnae in 1908, said that the effort in the early years of the existence of women's colleges was to demonstrate the fitness, the mental capacity of women, for the same education which men had been receiving for years. Mary Lyon, busy in 1838 in founding Mt. Holyoke College, demanded a higher education for women who might thus fit themselves to fill the places which were waiting for them. Mary Lyon was far ahead of her time. What woman without special train-

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

ing would today dare to offer herself as a candidate for a school position? The Girls' Latin School founded in Boston in 1878 through the efforts of many women in that city was an expression of the conviction of these women that given an even chance, girls could prove themselves equal to the demands of a classical education. The steady growth of this school with its rigidly maintained high standard has justified the belief of the founders. Wherever we turn, we find the same results: Fears that college women would not marry are not borne out by statistics; forebodings that health would be ruined are removed by records of our gymnastic departments which show improved physical conditions, due probably to the regularity of college life; doubts of the ability of women to maintain lines of thought are dispelled by the long lists of women filling positions inside our colleges and outside where intellectual worth and executive power are the prerequisites. Miss Thomas at Bryn Mawr, Miss Pendleton at Wellesley, and Miss Woolley at Mt. Holyoke are a few illustrations.

The demonstration of our ability to cope with an education is complete. Now we face a new situation: What education is best? To quote Dr. Eliot again from the same address: "We are free now to arrange for an education for women which is specially adapted to the needs of women." And again: "The prime motive of the higher education of women should be recognized as the development in women of the capacities and powers which fit them to make family life more intelligent, more enjoyable, happier, more productive,—productive in every sense, physically, mentally, and spiritually." Time was when Dr. Eliot himself did not believe in higher education for women, as is shown by an episode said to have taken place in a Harvard faculty meeting. President Eliot had been pleading the cause of Radcliffe, then known as "The Annex." One of the professors remarked that he remembered a similar meeting held in that very room some ten years before, when the chair had expressed an opinion exactly the opposite. "Well, sir," said Dr. Eliot, "if you are interested in that as a matter of history, I am very glad. As for myself, I hope I have learned something in ten years. We will proceed to vote," etc. He has become one of our strongest advocates and we desire to justify his faith in us.

And what does study of the present condition of college women show us? We find the classics and mathematics deserted, after the requirement of the first college years has been passed, except by those who have marked talent for these studies or who wish to fit themselves to teach them. We find them electing enthusiastically courses in

history, sociology, economics, and literature, cultural courses all, and tending to fit the students to fill their places in the social community to which they must go on leaving college. And we find many alumnae engaging in sociological work to such an extent that this is becoming a profession rivaling that of teaching, as eminently fit and proper for the educated woman.

What place does science fill? In my own college, Smith, a year's work in either chemistry or physics is required of every student; a class usually divides itself about evenly between the two subjects. Thereafter all work in these departments is elective. This year about 25 per cent of the class in elementary chemistry have continued it and 20 per cent will continue it through the rest of their college course. This is 10 per cent of the whole class. I suppose similar statistics could be gathered in other colleges. My study of the catalogs of our eastern colleges divides them into two classes: Those which teach, and those which do not teach, Home Economics. The former, such as Simmons and Teachers College, might be called technical schools; the latter, colleges of liberal arts. These technical schools are doing a splendid work, not only in training women for a professional career, but in raising the standard of living and in applying to daily tasks intelligent methods, lifting the drudgery of housekeeping by applying the scientific methods of the laboratory. The agricultural colleges are offering courses to the farmers' wives. At a reception in Geneseo a few years ago a woman spoke enthusiastically of a recent lecture which had been given by Miss Van Rensselaer of the New York State College of Agriculture and said, "I find I have been feeding my family on the things I ought not to have fed them on. I thought I was giving them of the best, whereas it was the worst possible combination. I am going to change." Perhaps she was reforming on insufficient knowledge but surely the desire that her family should benefit by the improved methods was praiseworthy. Cooking and sanitary science are being introduced into the grammar and preparatory schools all over the country.

In the meantime what are our colleges of liberal arts for women doing to give their students a share in the widespread desire for better living conditions? Almost without exception they offer a single course only, and that in food analysis, of three or five hours in a single semester! This course was introduced as a concession to the demands of alumnae, is taken only by the most advanced students in chemistry, and is of an exceedingly technical character.

What about the large numbers who graduate without taking more than the required chemistry? What of those who have taken no chemistry at all? Many of these begin at once to teach. They have not increased their knowledge of the benefits of science as applied to the welfare of man. Is it not possible to introduce courses of less technical character? Statistics say that there are some 75,000 women in the colleges of the country. They should be the leaders, trained in logical thinking with power of concentrating their attention on the matter in hand. Could we infect them with our enthusiasm for scientific housekeeping, there would be no household problems!

Professor Giddings defines the *home* as the place of development of the social individual, economic and cultural. We have misplaced the emphasis hitherto; we are devoting our energies to the city and state as the place of development of the individual rather than to the home. Public agencies have long been at work for his *cultural* development and now measures are being urged for his economic development. The economic valuation of a man is $20,000. This is based upon efficiency, which is largely a matter of education and health, assets for which we are all eager. The value of education we have long recognized and have provided for in our school systems; the importance of health is now coming to our attention. Modern methods are preventive rather than curative. We have discovered a new truth in the old adage, "An ounce of prevention is worth a pound of cure." In olden times a surgeon washed his hands *after* an operation; now he washes them *before!* Insurance companies are providing nurses for their sick policy holders, a well man being of more value to them that a sick man. In the crowded city districts mothers are given instruction about the care of their babies and milk suited to the need of each child is provided at small cost. These precautions, education and proper diet, have tremendously decreased the infant mortality.

There is a carefully regulated diet for the invalid. But what about the well man? Does he not need the right food, food suited to his occupation to keep him in fit condition in order that he may live at the point of maximum efficiency? Nature has given each of us a wide margin. Modern surgery removes organs and transplants organs and yet active life continues. We can best conserve life by conserving the energy which comes from the food we eat and the air we breathe. We have opened our windows and are less afraid of a draft than we are of breathing vitiated air, but we have not yet very generally given thought to the food we eat. As long as it is cooked according to fa-

miliar standards, we accept it. President Jesse said in 1905 that "women are the prime factors in society and should realize that life for themselves and others rests upon a physical basis and that life and health depend in large degree upon the choice of food, the preparation of it, household sanitation, and household economics." We have not universally accepted this point of view. The attitude of the ordinary individual is well illustrated by a discussion between two students on the relation of chemistry and zoölogy. "Why," said one, "there is no relation. Zoölogy is life and chemistry is atoms!"

What we need to convince people of is that chemistry is life, that it is fundamental, and that it enters into all the reactions of living. Panama has become a health resort through the agency of the scientist. The chemistry of foods, the chemistry of life, animal and vegetable—biochemistry to use the new term—is very complex and it was not possible to teach it as a science until organic chemistry, pure and simple, had done its work of analysis and synthesis. But Pasteur, Fische, Kossel, Ehrlich, to mention only a few, have shoved ahead our knowledge of the carbohydrates, the proteins, the pigments, and the metabolic processes in the cell until now we have the material at hand for some scientific study of foods and food values in our college laboratories.

William H. Edwards, commissioner of street cleaning in New York City, is reported as saying this to the Vassar students:

> The housewife plays a more important part than she realizes in keeping the streets of our cities clean. Her standards of cleanliness in the home must be in evidence outside the house. Regularity in the output reduces congestion of refuse; proper separation of refuse adds to the sanitary conditions of removal. No woman who is a good housekeeper will throw papers or waste in the street, and most street litter was first thrown away by some thoughtless hand. Her husband will not throw his newspaper in the street. Her children will not litter our thoroughfares with all sorts of rubbish but will take a certain pride in helping to keep the streets clean.
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> The teachers in our public schools have the influencing of the children largely in their hands. Every teacher has the opportunity to teach patriotism to every little citizen by training him in loyal thought regarding his own city. She need go no further at first.

At Smith College in the department of chemistry we believe that scientific work is cultural; that scientific habits of thought are liberalizing; that it is possible to lay the foundations for a professional career whether that career be home-keeping or industrial chemistry. The course in general chemistry may be followed by a course of lectures

on the applications of chemical facts and principles to common life. We have a course in sanitary chemistry, a very technical course, such as is given at the Massachusetts Institute of Technology, one which makes a student familiar with the methods in use in our government and analytical food laboratories and which studies the problems of public health. We have also a course running through the year in what we have called "studies in fermentation." Here the study of the carbohydrates and the relation of the yeast cell to the carbohydrates takes us into the domain of biochemistry. Molds and bacteria follow naturally. After we have learned the technique of bacteriology we isolate and study the organisms gathered on a Petri-dish during a few seconds exposure in a room just swept or one just vacated by a class. We isolate and study the organisms collected from the daily supply of milk. Our constant object is to compare the standard uncontaminated material with the fermented or changed material. The importance of the by-product is dwelt upon and the relation of the reaction "in vitro" to the reaction "in vivo" is emphasized. Much of the reading in connection with the course has to be magazine reading and this too lays stress upon the fact that most of this work is recent, although the beginnings date far back before there was any science of chemistry.

There has been one unexpected development of this course in which the faculty of the department are interested. Fifty per cent of the students have entered laboratories as assistants or have gone to medical schools. There seems here a rapidly enlarging field for women workers. The eagerness with which these opportunities are sought show how ill adapted many of our alumnae feel for teaching. It is no part of our intention to become distinctly a training school for technical chemists and yet our students want to know that the long afternoons spent in the laboratory do prepare them if necessary to do a real work with a paying wage. In our academic circles as elsewhere the stamp of success is that it pays. There seems to be slowly developing a consciousness of the importance of this kind of work for women, and opportunities for its practice are rapidly increasing. It is an interesting development and as such we shall do what we can to make it prosper. It is not, however, our chief aim. Our chief aim is to give these students a liberal culture, to develop such trained minds that logical thinking and sound opinions can be brought to the solution of the problems which they meet. The most absorbing work of our research laboratories today is bridging the gap beween the chemistry

of the test tube and the chemistry of the living cell, the most wonderful laboratory of all. But we know that the discovery today in the laboratory is the commonplace necessity of the world tomorrow. Already much of this biochemical metabolism is familiar to us and its application has revolutionized many industrial and agricultural processes. Why should we allow these women to go out without the faintest inkling of the existence of these discoveries? Why should they perpetuate the theory that alcohol and carbondioxide are the sole products of the fermentation of sugar when the list of known by-products is already large and we are not yet at the end?

We are constantly hearing about the high cost of living. Mrs. Richards said it should be the "cost of high living." Whichever it is, we read about commissions of national and international scope appointed to investigate these matters and find a solution. Crops are large, we have world markets, and yet prices continue to go up. Let us inform the women; they are the buyers, very largely, and as such affect the supply and demand. If they were resourceful and could substitute some other method in the household for the one which no longer pays, as is the way in the industrial world, this difficulty of the high cost of living would largely disappear. It is not protection by government that we need so much as a wider education in the practical things of daily living. Pasteur gave his attention to the infinitely little and left the world his everlasting debtor. What is the use in spending years in the study of literature and art only to find ourselves at the end of it unable to cope with the industrial condition in our own household! Why try to regenerate the so-called slums all the winter, when we are ourselves forced to live in a summer boarding house where dairy and culinary methods are the methods of our grandmothers? First reform our own homes, then reform others. Demand for more up-to-date methods, bacterial and chemical, would stimulate the supply and decrease the cost. But we cannot demand that of which we know nothing. Let us educate the women in our colleges in the practical art of living, make them leaders, pioneers, missionaries if you will, for more rational conditions in all matters which pertain to living.

SOME IMPORTANT CONSIDERATIONS IN THE FEEDING OF YOUNG CHILDREN.[1]

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Those who are interested in applying the best established scientific principles of nutrition to the feeding of infants find, on reading the literature, a most bewildering array of practices advocated by those who have felt competent to give advice on this most important subject. At one extreme is the method of Biedert[2] which has been closely approximated in the instructions widely circulated in this country for the guidance of mothers. A top milk containing from 8 to 10 per cent of fat is employed as a basis for compounding the ration, which is made during the first month by diluting this fat-rich milk with three times its volume of water and adding milk sugar in the proportion of 36 grams per liter. This type of ration is the result of the belief, at one time almost universal and still widely prevalent, that the casein of cow's milk is especially difficult of digestion in the stomach of the human infant.

Opposed to this view are the teachings of Heubner,[3] who urges that healthy children can be fed large amounts of the proteins of cow's milk without harm. He holds that excess of fluids is especially to be avoided, and is much more harmful than an excess of proteins. Heubner's method of preparing rations is to dilute one volume of cow's milk with one-half volume of oatmeal or barley water.

The recent researches of Czerny[4] have fully confirmed the contention of Heubner respecting the lack of harm resulting from feeding casein of cow's milk. He has gone much further, however, and has shown conclusively that, contrary to the older views, fat and not protein is the disturbing constituent in the rations of young children. Bren-

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

[2] *Kinderernahrung im Sauglingsalter*, 4th ed., Stuttgart, 1900.

[3] *Sauglingsernahrung und Sauglungs-Spitaler*, Berlin, 1897.

[4] *Jahrbuch für Kinderheilkunde*, vol. 49.

nemann and Walls[5] in this country, have fully confirmed Czerny's observations and have advocated the feeding of whole milk poor in fat. Walls in an extensive practice observed even premature infants to digest satisfactorily whole skimmed milk. The U. S. Public Health and Marine Hospital Service has recently strongly emphasized the rationality of this plan of infant feeding in a most excellent discussion of the principles of infant feeding by Dr. J. W. Schereschewsky.[6]

The discovery that fat is the disturbing constituent is distinctly the result of scientific nutrition studies. The well established facts concerning the deportment of excessive quantities of fat in the digestive tract of an infant are as follows: It tends to remain in the stomach longer than do proteins or carbohydrates, and even in moderate amounts tends to delay the emptying of the stomach. This is an important matter when, as in the young infant, the feeding periods follow closely upon each other. While it is in the stomach it is highly probable that no fat digestion takes place, as the recent investigations of London[7] have shown. This long retention of the food allows the stomach little or no rest before another meal is introduced, and it may not be prepared to secrete a new supply of hydrochloric acid without some delay. This is frequently the beginning of the child's digestive disturbances. The hydrochloric acid which the stomach normally produces as soon as food is introduced serves to check promptly the action of any micro-organisms which may be present. In the absence of this acid bacteria begin at once to develop, generating gas to give colic, and abnormal acids which give rise to "sour" stomach.

After passing into the intestine, a large part of the fats of the food are cleaved into fatty acids and glycerine, by the lipolytic enzyme of the pancreas. The fatty acids readily form, with the calcium and magnesium present, the same insoluble soaps produced by soaps in hard water. Of all the food principles fats and the insoluble soaps formed from them are the most difficult of absorption, and accumulating in the large intestine are the cause in many instances of the persistent constipation so common in young children. The apparent curds in the stools of young children are now known to consist ordinarily of soaps, fats, and fatty acids. Under these conditions the child loses not only a considerable part of the fat of the food, but also suffers

[5] *Journal of the American Medical Association* (1907), vol. 48; *ibid.*, p. 1389.
[6] U. S. Public Health and Marine Hospital Service Bulletin 41.
[7] *Zeitschrift für physiologische Chemie*, 50, p. 125.

a depletion of the calcium supply of its body, so essential at this time for bone formation.

Nature supplies in milk an adequate supply of both acid and basic elements, with a slight preponderance of the latter. When however there is a loss of lime through the intestine as soaps, an excess of acid elements is left which must be gotten rid of through the kidneys. When we add to the above the fact that fats are oxidized with more difficulty in the body for heat and energy production than are sugars and proteins, the logic of employing fat-poor milks in infant feeding becomes apparent. Clinical experience in this country and abroad has served to strengthen the case against the practice of feeding milks rich in fat or rations prepared by modifying top milks.

The methods of infant feeding in which the rations are prepared by diluting top milks containing from 8 to 10 per cent of fat and adding milk sugar are, in the light of modern knowledge, open to serious criticism for another reason. It has long been assumed, because the salts of cow's milk are present to the extent of more than three times the amount found in human milk, that dilution does not lead to an abnormal salt mixture in the ration of the child. While this is true so far as the total *quantity* of salts present in the final mixture are concerned, it is now well known that a serious alteration in the *character* of the salt mixture is effected by this procedure. Kastle[8] has recently studied the *balance* between the acids and bases present in the salts of human and of cow's milk, and has shown that while the quantity of salts in cow's milk is much higher than in human milk the degree of alkalinity in the total mixture is almost identical in both. In diluting top milks according to certain systems in common use the alkalinity of the ash mixture given to the infant may be reduced to a half or a third that supplied by a ration of mother's milk. Just how serious may be the consequences of thus disturbing the nice balance between the acids and bases supplied in normal milk cannot be stated with certainty, but we are justified in warning against the possibility of danger in feeding an infant a monotonous ration departing so widely in this respect from the normal standard.

The widespread use of proprietary infant foods calls for a brief discussion. The "baby foods" are of two general classes. The so-called complete foods are made up of condensed milk and sugar, or of milk evaporated to dryness and compounded with partly dextrinized

[8] *American Journal of Physiology*, 22 (1908).

flours. In malted milks the carbohydrate is principally malt sugar. Now milk cannot be evaporated to dryness without losing in some degree its appetizing and nutritious qualities, as the proteins become altered in the process. Anyone who will give the matter serious consideration should realize from personal experience the difference in dietary value between fresh animal proteins and the corresponding "denatured" articles of commerce. The universal verdict of those who have had large opportunity for observation is that infants fed on such preparations alone and for some time are less resistant to infections and show evidences of malnutrition, especially rickets and scurvy. All such mixtures are made up by formulas supposed to secure an appropriate "balance" between protein, carbohydrates, and fat, but an investigation now in progress has convinced the writer that in the great variations from the mineral salt mixture supplied by whole milk which are found in some of the preparations sold as infant foods may be found an adequate reason for the physiological insufficiency.

In the second class are the malted and farinaceous foods. These are sold to be used with fresh milk. There is nothing to be said against their use except their price, which is exorbitant, and that there is always an element of fraud in the use of the word "food" in the advertising matter which sells the article or which guides the mother in their use. The uninformed are led to believe that the "food" possesses some special physiological properties which make it and not the milk with which it is fed the more important constituent of the child's diet. In reality it is now a matter of common knowledge among dietitians that these "foods" have no advantage over barley, oatmeal, or the simpler carbohydrates, which can be had at ordinary food prices.

It should be emphasized repeatedly in all courses in dietetics that of all foods having special properties in inducing growth and health in the young, nothing derived from the animal or vegetable kingdoms can compare with fresh, clean milk. Milk is a complete food and needs no supplements. The writer kept a pig fresh from its mother on fat-free milk alone during seventeen months. During this period she developed in a perfectly normal manner, reaching a weight of 406 pounds at the age of thirteen months, at which time she gave birth to ten normally developed pigs and, continuing on the milk ration, suckled them to the normal weaning time. Experienced animal husbandmen predicted that she would suffer malnutrition, but all who saw her when full-grown pronounced her normal in every respect.

It is a mistake to assume that some other ingredient is necessary or desirable in the early months of life.

The thing of greatest importance is that the milk be clean. We have become so accustomed to milk which will keep but a few hours without souring, even in a refrigerator, that our standard of cleanliness in milk for infants is too low. A short time ago a customer of the dairy barn of the University of Wisconsin started on a trip to the Pacific coast with a young infant. Fearing to give the child milk of uncertain quality secured en route the father brought to the dairy barn a bottle sterilized by heat and it was filled by milking directly into it from a clean udder. No extraordinary precautions were taken, but the infant was fed on this milk during the entire trip which lasted three days, and some of the milk left over was reported to have been still sweet three days later. During the Paris Exposition a sample of milk collected with great care to avoid contamination was taken from the Illinois Experiment Station to Paris without heating, and was exhibited there and brought back in a fresh condition. It is not possible, ordinarily, to obtain milk of this character for infant feeding, but it is easily possible, if the public will demand it, to secure milk which will keep perfectly in an ordinary refrigerator at least twice as long as do the better grades of market milks at present. If this were realized a very great deal of the suffering and mortality among young children would be avoided.

It is astonishing to see the lack of common sense sometimes displayed by parents and even physicians in deciding how to feed an infant that is not growing, and with which something is evidently wrong. A chemist is employed to analyse the milk, and the departure of his figures from the normal values for any constituent is made the reason or excuse for changing to artificial feeding. The writer has had frequent requests for such analyses but has refused for several years to make them. Instead the following advice is given free: Spend the money which the analysis would cost for an accurate scale with which to weigh the baby. Weigh it frequently and record the weights as taken. If it stops growing and manifests signs of distress apparently due to diet, weigh it before and after nursings to ascertain whether it is getting too little, too much, or a normal amount of food. In determining this consult the tables in some of the books written by reputable physicians for the guidance of mothers. If the child is getting an insufficient *quantity* it must be fed to supplement the breast feeding,

which should be continued. Feed it fresh, clean, fat-poor milk, certified if possible, diluted according to the age of the infant. Begin with it quite dilute and gradually give it stronger as the child shows that it can take it. If the child obtains from nursing the quantity of milk given in the statistical tables as normal for that age and is not growing or is in distress the milk is probably of poor quality, and again a change should be made to supplementary partial feeding.

If an infant is over eating, it should readily become evident to those who observe it closely. Regurgitation and vomiting appears, at first soon after feeding; later this is delayed and becomes a part of a general dyspeptic condition. These, with short intervals of restless sleep and periods of colic, should indicate the need of limiting the food intake and temporarily lengthening the intervals between feedings.

This may seem radical to many, but it is certainly more logical than to determine the method of procedure on a single analysis of a sample of milk. It is well known that various causes may lead to a deficiency of the milk supply and also to an abnormal composition. The mental state of the mother at times when it is desirable to obtain a sample for the chemist are usually just such as would lead to the collection of an abnormal sample, and accordingly the remedial measures adopted from the chemist's findings may be based on wrong assumptions.

A word should also be said here regarding the diet during the much dreaded second summer. This is the time when the vigilance of the careful mother begins to relax, and it is to errors in the diet that most of the disorders of this period are traceable. Safety should still be the watchword. While considerable variety may be given, everything should be selected with a view to protecting the still relatively feeble digestive tract from infection. The same care as to the cleanliness of the milk supply and as to proper refrigeration should be given as during the child's earlier life. Cereals, bread, broths, and a few well cooked vegetables are all that is necessary to supplement the regular milk diet. No food other than milk yields sufficient bone building materials, and milk should therefore hold a prominent place in the diet of the child all through the growing period. If the child refuses to drink milk, it should be given foods prepared with milk. Under no circumstances permit a child to discontinue the use of milk during the growing period. The unfortunate experiences of this period are usually traceable to lack of vigilance in the care of the milk, or to feeding unsafe foods such as partly ripe fruits, uncooked berries, salads, etc.

Lastly, I would call your attention to the fact that the powers of growth dwindle rapidly and steadily from birth onward, and any cessation of growth, even for a short time, should be regarded with concern. The earlier in life the more precious is each day. Parents should make it a part of their duty to ascertain by careful weighings at proper intervals that growth is going on, and at a normal rate. If a cessation occur, remedial measures should be promptly taken to prevent any long break in the normal course of growth.

THE NUTRITIVE VALUE OF SEAWEEDS.[1]

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In many parts of the world the seaweed industry is a very important one. Tons of algae are gathered annually in China, Japan, and the East Indies, in the Hawaiian Islands, in France, Ireland, Scotland, and other European countries. While utilized to some extent in the arts, their chief significance lies in their extensive use as food for man. In Japan alone, according to the published reports of the Bureau of Fisheries, the value of the prepared seaweeds exceeds $2,000,000 annually, and it has been suggested that in the United States and the Hawaiian Islands, which are equally rich in marine plants, much greater commercial benefit might be derived from them than is the case at present if it could be clearly shown that they are really valuable as foodstuffs.

Until quite recently, little was known either in regard to their chemical composition or their food value, but methods of preparing them for the table are very old. In Japan, algae in general are called "nori," and this term appears in the names of products derived from them as funori, amanori, and the like. Among the most important seaweed preparations are kanten, kombu, amanori, and wakame.

Kanten is made from algae of the genus Gelidium, the various species of which yield a mass of jelly on boiling. This is strained off, dried, and sold in sticks or bars of different styles. It is used for food largely in the form of jellies or as thickening in soups and sauces, and the consumption is by no means limited to Japan. In the scientific world it is known as agar-agar, serving as a familiar culture medium in the bacteriological laboratory.

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911. For full details of the experimental work see the author's paper, Nutrition Investigation on the Carbohydrates of Lichens, Algae, and Related Substances, *Trans. Conn. Acad. Arts and Sciences*, 16 (1911), pp. 247–382.

Food preparations from kelps are known as kombu, made in Japan for more than two centuries. There are a dozen different forms, each with its own particular flavor and use. Some are eaten dry, others soaked in water, sugared, cooked with meat, or added to soups, sauces, and other dishes; in fact, kombu is one of the standard foods of the country.

Amanori is made from red laver, for many years cultivated for the purpose. Small quantities are eaten fresh, but the bulk of the product is sun dried in thin sheets after sorting and chopping. Before eating it is made crisp by heating, and then crushed between the hands and dropped into sauces, soups, or broths to impart flavor. At railway stations sheets of amanori spread with boiled rice and covered with meat or fish, rolled and cut into transverse slices, take the place of the American sandwich.

In Hawaii, edible algae are called "limu." Of these over seventy distinct species are used for food, more than half of these being very commonly so employed. No Hawaiian feast is ever considered complete without these "nymphs of the sea" which are to the nation the synonym for all that is delicious. They are eaten in many ways; uncooked, as a relish with meats or fish; cooked, in soups or roasted with meats and fish. Among the most popular are limu eleele, limu kohu, limu lipoa, limu huna, limu akiaki, and limu manauea.

Limu eleele is a general favorite, being eaten with almost everything, generally uncooked, and so taking the place of our salads in the menu. It is sometimes dropped into hot gravy, broth, or meat stew just before serving.

Limu kohu is sold in the form of globular masses about the size of a baseball. In preparation for the market it is slightly fermented and acquires a somewhat sour taste. It is pounded, mixed with salt, and eaten with fresh fish.

Limu lipoa is popular on account of its spicy flavor and is frequently used as a condiment, taking the place of sage and pepper in the Hawaiian dietary. Limu huna is especially prized for boiling with squid or octopus. Limu manauea and limu akiaki yield large amounts of a clear mucilaginous extract which forms a fine jelly on cooling. The same is true of limu kohu and limu huna. These extracts are considered especially fine for thickening broths.

Many of the seaweeds used in Japan and Hawaii occur also along the coast of the United States and Europe and are to some extent used as food, but the only ones of enough importance to mention are

Irish moss, purple laver, and dulse. Irish moss or carragheen, the "tsunomata" of Japan, has long been used as a food stuff in Ireland. In this country it is found on the Atlantic coast from North Carolina to Maine, being especially abundant north of Cape Cod. It is used in cookery chiefly for making blancmange. Red laver, the source of Japanese amanori, is found in abundance on the rocky shores of America and Europe generally, but is not used in this country save sparingly by the Chinese, who usually import it directly from China, and by some of the Indians of our northwest coast. In Ireland it is known as "sloak" and is eaten as a vegetable, boiled and seasoned with butter, pepper, and vinegar, or combined with leeks and onions. Dulse is found abundantly on our own rocky coasts, especially in New England, and also on the rough shores of Great Britain. In this country it is usually sun dried with the salt water adhering and eaten as a relish. In Scotland it has long played a more prominent part, "a dish of dulse boiled in milk" being styled the best of all vegetables.

It has seemed worth while to investigate the nutritive properties of materials so widely used as food, not only because they already enter into the dietary of many people, but also because if their nutritive value were as great as is commonly believed, a wider use of such comparatively cheap materials would be economically advantageous, and also because they are frequently recommended as nutrients in disease, where the character of the diet assumes very great importance.

Published analyses show that the fresh algae contain about 80 per cent water, 3 per cent protein, 14 per cent carbohydrate and 4 per cent ash, hence they would seem to compare favorably with other green vegetables as foodstuffs. It is not safe, however, to assume that substances reported as protein, fats, and carbohydrate in a proximate analysis are necessarily capable of utilization by the animal organism. There is, on the one hand, a possibility that the nutrients may be unavailable on account of physical conditions which interfere with digestion and assimilation, cellulose structures, as is well known, preventing complete absorption of foodstuffs in many vegetable products; and on the other hand, the usual methods of analysis do not distinguish between true proteins and nitrogenous bodies in general, nor between fats and other ether-soluble substances and do not discriminate among carbohydrates except in the case of the more resistant cellulose. It is well known that the nitrogenous material of mushrooms, once so highly regarded that this plant was called the "vegetable beefsteak,"

is so small in amount and of such a nature that it is of practically no value to the body, and it has been shown that carbohydrates which seemed theoretically most easy of digestion, being perfectly soluble and easily hydrolyzed to dextrose or levulose, are not converted to sugar by the enzymes in the body, and unless hydrolzyed by the acid of the gastric juice, seem to have little chance of contributing to the nourishment of the body.

In determining the nutritive value of any product it is therefore necessary to apply, besides mere chemical analysis other criteria, such as the action of the digestive fluids, the action of bacteria, not only by experiments outside the body but by actually feeding the substances in question, and also by observing their fate when introduced directly into the blood stream without the intervention of the alimentary tract. Such investigations the author has carried out with a number of species of marine algae. Eight of these were obtained from Hawaii through the kindness of Miss Minnie Reed of the Kahahameha Manual Training School in Honolulu, and two (dulse and Irish moss) in our eastern markets. With the exception of three "limus" (eleele, pahapaha, and lipoa) all yielded considerable amounts of soluble carbohydrates, sometimes only 4 or 5 per cent of insoluble material remaining, as for instance in the case of Irish moss, limu manauea, and limu huna.

The carbohydrates of these algae are chiefly pentosans and galactans i.e., hemicelluloses yielding respectively pentose and galactose on hydrolysis. As a class, the hemicelluloses are distinguished from cellulose by hydrolysis on boiling with dilute mineral acid, and from other polysaccharids by their resistance to ordinary diastatic enzymes. They are frequently complex in character, being found in loose chemical combinations, so that the terms pentosan and galactan as used here refer to the chief component rather than to an absolutely pure substance. All the gelatinizing extracts (those from Irish moss, limu huna, limu manauea, limu akiaki, limu uaualoli, and limu kohu), consist principally of galactans; from dulse a soluble pentosan was derived, which was not gelatinous; and the three limus which did not yield water extracts consisted principally of pentosans. For experimental purposes these were simply ground as finely as possible.

Artificial digestion experiments with human saliva, malt diastase, dog's pancreatic juice, pig's pancreatic extreact, and extracts of dog's intestines and pig's stomach showed that these enzymes had no hydrolyzing effect upon any of these substances. With artificial gastric juice

and "taka" diastase, long incubation resulted in slight hydrolysis in two instances, but controls showed that in the case of gastric juice the action was attributable to the acid present.

When pure, dilute solutions of the galactans and pentosans were subjected to the action of various bacteria commonly occurring in the alimentary tract, to mixtures of soil and fecal bacteria, and of powerful putrefactive anaerobes, for periods of three days under various favorable conditions, there was neither sugar production nor loss of carbohydrate material. Irish moss remained unchanged when the incubation was continued for four weeks, but the pentosan of dulse disappeared to some extent in the cultures of soil and fecal anaerobes and aerobes and sugar was formed in cultures of two putrefactive anaerobes. It is evident that these hemicelluloses are as resistant to the action of bacteria as of digestive enzymes. It has been suggested that limu manauea, which yields a jelly firm at body temperature, might be used in bacteriological laboratories as a substitute for agar-agar, on account of this high resistancy.

When introduced into the alimentary tract of dogs and human subjects as part of a cellulose-free diet, the pentosan of dulse disappeared almost completely in the man and only 25 per cent was recovered in the feces in the case of dogs. Of the seaweeds fed in toto (finely ground and thoroughly cooked to facilitate digestion) the results were similar, but the coefficient of digestibility was lower, averaging 50 per cent owing doubtless to mechanical conditions and the greater resistance of the insoluble pentosans. The average coefficient of digestibility of the galactans was on the contrary only 26 per cent. Irish moss was excreted quantitatively in the case of human subjects, and even limu akiaki, which is hydrolyzed at body temperature by 0.2 per cent hydrochloric acid showed a coefficient of digestibility of only 60 per cent.

Comparison of the feeding experiments with the bacteriological investigations shows that the carbohydrates most readily attacked by bacteria disappear most completely from the digestive tract, and since the alimentary enzyms tried had no effect, it seems reasonable to consider this apparent digestibility in any given instance as due to the influence of the micro-organisms of the intestinal canal.

There remains, however, the possibility of these substances being absorbed unaltered, and transformed into available compounds within the body proper. To test this point, parenteral injections both subcutaneous and intraperitoneal were made in small dogs, and the urine examined both before and after the operation. Solutions of the dulse

and Irish moss preparations were speedily and apparently completely recovered. The results were therefore in harmony with the accepted fact that the polysaccharids must be converted into monosaccharids before they can enter into the processes of intermediary metabolism.

From such experiments it becomes evident that the solubility of a carbohydrate, or its gelatinizing power, is no guarantee of its digestibility or nutritive value. Aside from the possible benefit which may be derived from the high ash content, and from the fact that the undigested carbohydrates may have a useful function in counteracting constipation, owing to their power of retaining moisture or to their stimulating effect upon the intestinal secretions, it is impossible to attribute to them any important dietetic properties. They are to be regarded as food accessories rather than true nutrients.

POSSIBILITY OF KAFFIR CORN FOR HUMAN FOOD.[1]

BLANCHE INGERSOLL.

Kansas State Agricultural College.

Kaffir corn, as well as other grain sorghums, has been commonly used as human food in Africa, India, and some parts of Asia; but practically the only application of this sort that has been made of it in this country is of the meal, ground locally and usually in the rural districts, and used in making batter cakes and similar articles.

There seemed to be no reason why, if properly milled, Kaffir products should not be utilized more generally. It was for the purpose of discovering the possibilities in this direction that some experimental work was done at the Kansas State Agricultural College last spring. These experiments were conducted on such a small scale that no definite conclusions as to the details of the cookery of Kaffir corn could be reached, but they proved beyond a doubt that it has great possibilities.

Analysis shows that the meal is very similar to corn meal but somewhat deficient in protein. It makes a good substiture for corn meal and can be used to replace it in nearly every case. When used alone it requires considerable liquid to mix it, lacks sufficient gluten to hold together, and is rather harsh and somewhat tasteless; but when mixed with wheat flour which supplies the gluten the results are

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

very successful. In most cases a mixture of two parts Kaffir to one part of wheat flour is good, and in practically all cases a mixture of half and half is successful.

Black hull Kaffir flour, white durra flour, black hull Kaffir meal, and white durra meal were used in the experiments. Practically the only difference between the black hull Kaffir products and the white durra products as shown by the results was the darker color of the black hull variety which made the article less attractive to the eye. In case other coloring was added as molasses, egg yolks, etc., practically no difference was noticed.

Recipes for Johnny cake, muffins, griddle cakes, Boston brown bread, and cakes were worked out. The mush was not very palatable as a cereal but was good when fried. As the supply of flour was limited no extensive experiments could be made with it. Recipes calling for wheat flour were used successfully without any change with the exception that the doughs—biscuits, cookies, etc.—required more Kaffir flour than they would have of wheat flour.

Kaffir corn has a characteristic flavor which was very noticeable in some of the results, in some cases making the article more appetizing than otherwise. It seems rather out of place in biscuit but gives an excellent flavor to muffins and cup cake, and if used would give variety of flavor to the diet. In brown bread, gingerbread, sponge cake, molasses cookies, and similar recipes, the flavor of the Kaffir corn is only slightly noticeable and in some cases not at all.

Because of the peculiar adaptability of Kaffir corn to the dry farming region any further use of it or of its products is of especial interest and importance.

THE POSSIBILITIES OF A HOME-MAKER'S COURSE.[1]

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The expression "home-maker's course" may mean a high school course in which the program is so arranged as to offer a large number of subjects bearing especially on the home, and giving comparatively few so-called cultural subjects—just the opposite, in fact, of the usual high school course. The Minnesota Agricultural High School affords an example of such a course; and a very large percentage of its girl graduates return to their homes and use there their school-gained knowledge. On the other hand, the expression may mean a college course in which all the subjects offered are equal, in a scientific, cultural way, to those of other college courses, yet especially useful to the home-guard, the citizen-former, the chief feeder, clothier, and trainer of human kind; such a course, in short, as prepares for teaching in a special profession and at the same time for meeting the responsibilities and solving the problems usually confronted in life.

If each daughter in the land could have the benefit of one or more such courses, but few generations would pass before every woman would thoroughly appreciate the importance and magnitude of the home-maker's profession and be anxious to solve successfully all its problems. Educators can aid much in giving young people a right view of life, as the progress in agricultural pursuits plainly shows.

An intelligent stock-raiser of the present time employs to feed and care for his stock such men as are capable of producing from good specimens of young animals the best adults of their kind. Hasten the day when the housewife can secure equally efficient help to aid in caring for the family, which collectively represents the most important of all animals.

In order to bring about such a condition, education for home life must be made universal. Men's vocations are varied, hence boys may

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

need multiple courses, but every girl should finish a well-planned home-maker's course before any other is offered. Such a course fits its graduates for the general life of a home-maker; and, as most women will choose home-making as their ultimate and lifelong work, all need such a course. Young women wishing to enter special professions would readily find a suitable college course, and little time need be lost on account of having pursued the special home-maker's high school course, rather than the usual general one.

In the present plan of education, very few subjects tending to enlighten the student on specifically home duties are offered, and these few are not available to all. Furthermore, the subjects now offered occupy too little time to render every girl proficient in them. All mothers should be aroused to a full sense of their duty in this matter of educating the daughters, and of so arranging school courses as to magnify the daily duties of life. Closely uniting the instruction given in the home and at the school will aid in promoting this just and good cause. Children must have homes; meals must be prepared, clothing made, and all the varied activities of life carried on. Such can be taught in an educational way in the schools, but the lessons learned at school should be given practical application by the children in their homes.

Other professions do not send out unpracticed workers; why should this profession, the most important of all? Young medical students are not permitted to practice without experience, and frequently each is required to act as "interne" at some hospital for at least one year. Why should young home-makers undertake their work with only a general education and no practice? The mothers are far more responsible for the health of families than are the doctors.

The idea that the schools are wholly responsible for the education of our girls must be eradicated. Schools cannot do all this work, as experience has shown. They have earnestly tried to solve the problem, by including home-making subjects in their curricula and striving to render them popular. In some cases cooking and sewing are the only special subjects offered, and as each of these can be given only once a week, little advance is made in elevating the standards of home work. Such courses should be comprehensive and thorough including many allied subjects and elucidating underlying sciences. Physiology, physics, chemistry, bacteriology, and many other subjects have a decided bearing on home work, and should be so taught as to show the application of their principles. It is a mistake to suppose that the domestic science teachers and the mothers can alone produce the most successful home-makers. Every subject which bears on the home

must be taught in this relation, and made to give both practical and cultural value. Both patrons and pupils are desirous of more and better help from the public schools, as the following sample letters attest:

(1) I took all the domestic science that was offered in the school which I attended, but I find my knowledge inadequate for a housekeeper.—*Young Bride.*

(2) I am very much interested in domestic science and home-making work in the public schools. Quite too little of this important subject is taught. I recognize the difficulty and slowness which will necessarily attend the introduction of this line of study in the country schools. There seems to be no reason, however, why a greater amount of time should not be given to it in the city schools. The subject should not only be placed in the public schools before the pupils have passed into the high school, but should be continued throughout the high school course. From the time the pupil enters the seventh grade to final graduation, the majority of both boys and girls have a great desire to '*make* something' which may serve a useful purpose. An incident in our own family shows the importance of carrying this work through the entire school period. The pupil became very much interested in cooking while in the seventh and eighth grades and although the work was given but once a week became fairly proficient, taking considerable interest in the practical part of carrying on the household. With her entrance to the high school, where she took up subjects not closely related to home problems, interest in the practical problems of the home ceased. In short, the practical side of home-making had few attractions when it was not linked with the educational features. Others have told me of similar instances in their families. These are lamentable conditions; and the subject seems of so much importance that I take the liberty of writing you in regard to it, hoping that you may exert your influence in the educational field in an effort to prevent such elimination of essential vocational studies, at a time when they are so much needed, and I believe wanted.—*A Citizen.*

There are many such appeals, and those interested in the public welfare should do all in their power to better conditions now, while the work is popular and while men of influence are ready to aid in furthering this cause. Some cities offer domestic science in the high school as an optional to Latin. Why is not a similar arrangement possible in all such schools? Doubtless this would increase the expense of school maintenance somewhat; but this matters little, if girls are thereby imbued with a love for home-making and are rendered more capable of performing their duties in life. It is generally easier to make a new garment than to remodel an old one. So it is with school courses; and, in the consolidated rural schools now just making their first appearance, there is opportunity for organizing in such a way as to suit new conditions and test suggested plans. All work on home subjects should be so arranged as to extend through at least three years; cooking and sewing should each occur at least twice a

week. All practice-work should be such as to insure popularity with the patrons from the beginning. Sewing, which forms wearable garments, and cooking, which prepares food from materials in general use in any special community, would, no doubt, meet this requirement and the course should include all subjects belonging to hygiene.

All sciences should be taught in an applied way, and all subjects allied to the home should be given a place on the program. Such a course should be thorough, scientific, and useful, hence popular with the people and lasting in its benefits.

These new schools should be primarily for the rural districts, just as the city high schools are primarily for the city districts. Teachers in these schools should understand not only general rural but also special local conditions. The farmer regards the agricultural colleges and high schools as his institutions; hence let all such institutions of learning make special efforts to gather together young women from the rural districts, and educate them for teachers in those consolidated schools, which already exist, and those which are soon to follow. Minnesota's last legislature provided for twenty-five such schools in this state in addition to the ten already existing.

These institutions should prepare not only teachers for cooking and sewing, but for the allied subjects and the sciences underlying home-making; young women from the country, especially, should find training here. Permanent success demands that home-making work be put on a scientific basis, as well as that it be popularized. Rural communities can be best led by their own people. As good raw material for teachers may be found in those communities as anywhere and the agricultural high schools and colleges can, by careful work in properly educating girls in the one, for home-makers, and in the other, for teachers, evolve a new, needed, and appreciated home-maker's course.

HOME ECONOMICS IN THE AGRICULTURAL COLLEGE.[1]

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While Home Economics did not have its origin in the agricultural college, these institutions have been quick to embrace this very neces-

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

sary part of a curriculum which is both practical and scientific. In the new states of the west Home Economics is not only a live problem for the native American, but also a problem for the foreigner who comes to our fertile farm lands with little money or education but with a strong body, a willing hand, and a purpose to become a true and loyal citizen, and anxious to learn not only the methods of farming presented by the agricultural college, but also the customs of the homes. It is a noticeable fact that as our honest, hard-working Scandinavian population gains wealth, various members of the family or the friends are brought to America, and very often indeed as a first step the newcomer is taken to a shop and fitted out with clothing of our present day fashion. It is evident, therefore, that if the agricultural college of the West is to meet the needs of the community which it serves it cannot hope to do so by instruction of collegiate rank alone.

The agricultural college department of Home Economics must be practical, else instead of gaining ground its purpose is defeated and the student is made to feel that hand work is to be despised as unworthy of the scientifically trained person. Neither must the splendid facilities for scientific instruction be overlooked, for through federal and other aid the experiment station has become a valuable ally of the Home Economics work. Then too, almost all agricultural colleges offer excellent science courses in their departments of botany, zoölogy, physiology, bacteriology, chemistry, and physics. I would not advocate weakening these science courses, but rather adding a large amount of the practical as illustrative material. Most of the sciences are fast becoming adapted to the needs of the people; physics seems to be the last to fall in line, but the old time laboratory methods are now being improved by the addition of illustrations which imply the application of physical laws to the problems of daily housekeeping.

But if we provide only collegiate work for our students, what shall be done for the girls on the frontier who have no opportunities to do the required preparatory work, and from lack of preparatory schools may never become prepared to enter the college? It is evident that in the sparsely settled states the agricultural college must in some way furnish high school facilities that will prepare both the rural teacher and the average student for efficiency in life, and in some cases for college entrance as well. Not only is a high school invaluable for the student who registers in its courses, but it may furnish an opportunity for the senior in college to get methods and practice in teaching, for we must depend on the agricultural college to train many of the

teachers who are to be in sympathy and harmony with agriculture and farm people and their homes.

Another problem of the agricultural college is that from the very nature of the case the farm crops have not been harvested when the college year begins in September, and again the seeding must be done in the spring time long before commencement in June. This means that many a girl from the farm is deprived of both the beginning and the end of the school course. As the other students have had at least six weeks' start in the fall, the rural student feels that she is at a great disadvantage. This is sure to result in discouragement, and eventually she may give up the fight. Therefore, if the agricultural college is to educate the farmers' children there is but one thing for it to do and that is to arrange a course which will meet the time requirements of the student from the farm. Hence most of the agricultural colleges have introduced the so-called "short course," which in most institutions is a three months' course. These courses are well attended and at a few of the colleges it has been concluded that if a farmer's daughter could attend three months she might also attend five or six months, and I know of no college in which the longer term has been tried that it has not been a great success. Indeed, in many states it has practically supplanted the old three months' course. Not only do the girls come for the first year, but they are ambitious to finish a three year course. The great problem of this course is to keep from running it into a trade school, so eager are these young people to learn to cook and sew and perform other household work by the best methods. Thus the problem is, first, to create interest in the study of Home Economics from its practical view-point and then to continue this interest further into the allied sciences. How often these students have said, "I really had no idea that I could learn anything about bread and butter and meat and potatoes, but it is really wonderful to study about these foods." These young women represent intelligent and happy home makers and we can never have too many of them.

Home Economics, however, cannot confine its help to those who come to the college, for if it is to meet the requirements of the great agricultural class we must recognize that those who must remain at home are just as worthy and pay just as much to support the institution, and to neglect them will be to lose an opportunity to aid the majority.

One of the principal avenues of reaching them is through the rural schools, by contests, both in the growing of foodstuffs and the cookery of food. Here the agricultural college may coöperate with the

county superintendent. He in turn endeavors to interest his teachers, and thus the district and later the whole county may have these contests. In Home Economics these contests may include breadmaking, canning, and sewing. After the contests are over the successful contestants of each county may become eligible to attend the Boys' and Girls' Institute at the agricultural college. In North Dakota the Boys' and Girls' Institute was first held about a year ago and nearly ninety children were enrolled. The railroads gave them free transportation and the college gave free instruction. Who can tell what that two weeks meant to those girls as they came in their little print dresses to learn about foods and sewing and home hygiene? The county superintendents or their deputies acted as escorts from each county and they attended the classes with the children and were also benefitted. I shall never forget one little girl who had driven fifty miles to reach the nearest railroad station, and I am sure she will never forget that institute and the inspiration received.

The farmers' institute and the extension department of the agricultural college are so closely allied that it seems difficult to separate them, and many times these two institutions work in conjunction. Some one has said that the weakest point in farmers' institute work is that although the interest is aroused, it comes but once a year and the listeners often fail to follow up the work. It is too much like a religious revival service in which enthusiasm is developed for the time, but is too apt to wane. Hence the importance of having the extension department follow immediately with the movable school, and this is a method which is applied not only to the agricultural work but also to that in Home Economics. In many localities the women's institutes are held separately from the men's institutes, in other localities they are held together, the number in attendance being the determining factor. Following the state speakers at the institute, the college extension force begins a five or ten day session with short courses in domestic science and domestic art for the women and girls, and these movable schools are beginning to form a most valuable part of the extension work. The lessons are practical, and the woman who has charge must be one who loves her work and knows her people. She should be sympathetic and deeply and sincerely interested in the citizens of her state. In North Dakota one of our college department women usually goes, thus effecting a mutual acquaintance and helpfulness.

A farmers' institute annual is published by almost every state, and as a generous portion of it is given to the discussion of Home Eco-

nomics topics, not only does the farmer receive helpful information but his wife as well. Home Economics subjects which seem especially interesting to the rural communities are the canning and preserving of fruits, vegetables, and meats, pickling, bread making, leavening agents, laundry and cleaning suggestions, methods and principles of cookery, hygiene, home nursing, sanitation, and similar practical subjects.

The farmer's club is a growing part of the social and intellectual life of the rural community. The agricultural college gladly coöperates with these clubs. On these occasions the farmers with their families usually gather at a central hall where they have lunch together at noon and then hold meetings in the afternoon. As the women and children are present, they receive their full share of the time on the program. It has been my experience that no subject so much appeals to these clubs as food values and balanced rations, and men and women are alike interested.

At the farmers' clubs the local talent exchange ideas as to improved methods of work. At one place I visited there was a splendid-looking display of canned vegetables, and the lady who had done the canning said proudly to her audience, "I did it with this," holding up a small package of "canning powder." It is on these occasions that the scientifically trained college woman must use great tact, and it is here that she feels as never before that it is one thing for the pure food laws to require truthful labels on foodstuffs and drugs, but quite another thing for the consumer to appreciate the full meaning of the labels. It is here that the agricultural college and experiment station comes to the rescue of the consumer on the farm.

Correspondence courses also come within the field of these state institutions, for it is their duty to serve the whole people and to do it at a minimum of expense. Women are becoming greatly interested in this part of the Home Economics work.

The summer school and teachers' institute in the co-educational agricultural college is not considered complete without instruction in Home Economics. I have been interested to note that 75 per cent of the teachers enrolled in North Dakota have elected this work even though they were not required to take it to get their certificates.

Perhaps one of the most interesting features of the Home Economics instruction outside of the college walls is the work done on the special trains. Last year this work was undertaken in a large number of states. A full discussion of the methods followed cannot be attempted here, but suffice it to say that the interest is intense and no agri-

cultural college should allow an opportunity to pass unheeded to send a Home Economics car on the special train.

In the *World's Work* for November are illustrations of some of these cars, among them the North Dakota Home Economics car. Among the articles exhibited were dress patterns, a library, exhibits showing food composition, household conveniences, lighting, heating, and plumbing plants, all in miniature, working models showing how the farm home can be made modern, a sanitary exhibit showing plates of bacteria grown from a drop of well water, and a graphic illustration of the necessity of ventilation. Who shall say how much this means to those far away from the advantages of the city?

The work in Home Economics is also extended to the state and county fairs, where it should be placed in the agricultural building to insure that those for whom it is especially intended may have the opportunity to see it. The girls' camps held in connection with the extension departments in a few of the states, the work in women's clubs, Chatauquas, etc., all are likewise in the field of this department.

The last feature of the work which I shall mention is presented to farm women through the avenue of farm journals and this is one of the principal methods of teaching Home Economics. The knowledge that the article came from the agricultural college means much to the country woman for she feels that it is not the production of a theorist but of a practical institution whose chief aim is the efficient management of the methods of work in the farm home.

HOME ECONOMICS EXTENSION WORK IN KANSAS.[1]

MARY PIERCE VAN ZILE.

Kansas State Agricultural College.

President Waters of the Kansas State Agricultural College in his recent inaugural address touched the keynote of public sentiment when he said, "While it is of paramount importance that the college gives thoroughly sound instruction to the young men and young women in residence, it is equally true that its activities must not end there. More and more must the college be carried to the people since but a small proportion of those who should avail themselves of its advantages can leave home."

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

In accordance with this idea, the extension work at the Kansas College has been emphasized from the very beginning of President Waters' administration. Previous to this time Home Economics extension work had been done by the regular teachers of the department. This necessitated a division of energy and of time, for in every case the teacher was called from her regular class duty when obliged to be in attendance at some meeting—oftentimes in a far distant part of the state. Much was accomplished, however, and the extension workers of today are privileged to garner the harvest whose seed was planted by some faithful worker of those earlier days. No story of the extension work of Home Economics in Kansas would be complete without references to what Mrs. Kedzie, Mrs. Calvin and others did in laying the foundations.

Recognizing the fact that organization is the basis of success, whatever be the undertaking, the Kansas College has developed a well organized system of extension work. which is in every detail the outgrowth of a careful study of all factors concerned. The home extension work is but a single sub-division of the larger scheme which has for its aim the reaching of the masses of the people and the development of all their interests. The legislature of 1911 made a liberal appropriation for the extension of industrial education in Kansas. At this time a young woman was selected and to her was given the responsibility for the extension work in Home Economics throughout the entire state. From time to time the Home Economics staff has been increased, until at present there are four women giving their full time to this work. It is still necessary at times for the teachers of the college Home Economics department to respond to a call to help carry on some phase of the extension work, but in so far as is possible the work is done by the regularly appointed instructors. It is carried on in the following definite ways and is supported by the fund that is appropriated by the legislature for college extension work.

Women's Auxiliary to Farmers' Institutes.—These organizations were the outgrowth of the frequently expressed wish of the women and girls in attendance at the regular farmers' institute gatherings for help in meeting their specific problems. The membership of the organization is made up for the most part of the farmers' wives and daughters, although any interested woman may become a member. The plan of organization is simple, and the meetings are held regularly once a month throughout the year. At these meetings the subjects of interest pertaining to home life are studied, with the help of sug-

gested programs with a carefully prepared list of references, and such material as may be available in bulletin form as sent from the college office. A report of each meeting is requested and inquiries regarding puzzling problems are encouraged. The Auxiliary holds its sectional meeting in connection with the annual farmers' institute meeting at which time a speaker is always present from the college department to give help and inspiration. The number of auxiliaries at the present time is 22, with a total membership of 585.

The Girls' Home Economics Club.—These clubs, now such an important phase of the extension work, were the outgrowth of contests in cooking and sewing. These contests were made possible through the coöperation of the county superintendents of schools who enlisted the girls' interest and supervised their work. The contests are governed by regulations formulated by the college department, the results are exhibited at the farmers' institute meetings, and the judges are usually college extension workers. This field of work proved to be of value, but very soon came the request for more assistance than the contests provided for. The Girls' Home Economics Clubs were formed to meet this demand. These clubs are designed to be substitutes for a Home Economics course in the public schools, especially in the rural districts until such work may become a part of the regular school work. The membership includes two groups of girls—the regular club being formed of girls from fifteen to twenty years of age, and the junior club of girls from ten to fourteen years. Any group of girls within the ages named, who will meet the requirements, are supplied with printed leaflet lessons by the college department. The conditions are that the organization must have a regular time and place of meeting; the club must be in charge of some responsible person; and the club must send to the college department a weekly report of all work done. The plan of work is substantially as follows: As soon as organization is complete, the names enrolled are sent to the college office, and printed leaflets are sent to each leader for the use of members. The lessons are worked out in some improvised laboratory, in the leader's kitchen, or in the homes of the individual members. At the weekly meeting of the club, a record of the results is made, showing for each member the number of trials, successes, and failures, together with any remarks or questions. These records are forwarded to the college department where they are carefully read. Corrections are made and the papers returned with the leaflets for the next lesson. At the present time, there are 64 of these clubs with a membership of 948.

Movable Schools.—One of the most popular of the different lines of extension work is the movable Home Economics schools. Any community in the state that can secure a class of twenty-four young women who will agree to pay a fee of $1.00 each to be used in meeting the expense of hall, materials, and equipment, may avail themselves of the opportunities of the school. The local communities must secure a suitable room in which the school may be held and must assume responsibility for its improvised equipment according to suggestions sent out by the college department. The college sends two instructors who for one week conduct daily lessons in both cooking and sewing. During the past year 31 of these schools have been held in the various small towns of Kansas.

Correspondence Courses.—Last year two correspondence courses in Home Economics were inaugurated, one in cooking and one in sewing. The texts for such work are supplied by the Home Economics department in the form of specially prepared bulletins. These are sent to the students together with a set of test questions. The answered questions are returned to the college for correction. At the present time there are 56 young women enrolled in these courses.

State Farmers' Institute.—In addition to these definite lines of work, the college extension department is endeavoring to be helpful in other ways. During the past year, two of the leading railroads of the state furnished a special train which carried agricultural experts into the territory traversed by these railroads. Members of the home extension force accompanied the party and were given an opportunity to speak to the women and girls at each stopping place of the train. It is estimated that 3,000 women of the most sparsely settled districts of the state were reached in this way and given the inspiration and hope that comes from the realization that their problems are the subject of special consideration by trained people. During the season of county fairs, the college department responds to frequent calls for exhibits of an educational character and for judges of award or for teachers to give demonstration lectures.

That the extension work has been worth while in the development of the Home Economics movement in Kansas is evidenced by the fact that today there are 439 rural schools and 124 high schools in the state teaching some phase of this work. May we not expect as the result a general uplift in the home life of the states and a realization of a more helpful and efficient civilization?

EXTENSION WORK IN MINNESOTA.[1]

MARY L. BULL.

University of Minnesota.

Extension work has been in progress in Minnesota continuously, in some form, for several years. Before the organization of the present extension division, each division of the school and college did as much as possible of this outside work. At first the several instructors were called upon from time to time, each to give something in his or her particular line at farmers' and women's club meetings, in village high schools, etc. Later, outlined courses of four or five lectures and demonstrations, covering as many weeks, were carried on in connection with schools or clubs in different places.

Finally, two years ago, an extension division was established, with workers whose entire time was devoted to extension work.

The boys' and girls' industrial contest work, which has been carried on throughout the state since 1904, has created a great interest in subjects pertaining to farm life; and we believe it has been of value to the older members of the farm families, as well as to the boys and girls of the state. Such work is in most cases carried on under the direct supervision of the county superintendent of schools; he, in turn, working in general along lines outlined by the state for the boys' and girls' industrial contest work. Since 1906 a state contest has been held in the Twin Cities each fall after the county fairs are over, usually at the time of the meeting of the Minnesota Educational Association. The local or county contests are often held in connection with the county fairs.

At present many counties have a building which is devoted entirely to this industrial contest work Some of these buildings are erected by the fair management, and others by individual subscription, or with money furnished by rural and village schools which they have in some way (as by school entertainments, socials, etc.) provided for that purpose In some cases the buildings are very substantial, attractive structures, and in others they are less expensive, but in any case such a building gives the young people a feeling of ownership and added interest in their work.

Any boy or girl in the state is eligible to enter the contest, either

[1] An abstract of a paper presented at the Washington Meeting of the American Home Economics Association, December, 1911.

in agriculture, manual training, domestic science, or domestic art. The work in Home Economics is divided into three classes, A, B, and C. Class A includes children under thirteen years of age who are not in a graded or high school; class B all from thirteen to eighteen years of age who are not in a graded or high school; and class C any boy or girl not over eighteen who is in a graded or high school.

The winners of the first six prizes in each class in each county are allowed to compete in the state contest, where the winners of county prizes often make necessary careful scrutiny on the part of the judges. The fair associations, commercial clubs, local merchants, and other business men have been very liberal in their contributions for premiums, thus lending their aid in arousing interest and furthering the work. This year the state legislature appropriated $2,000 per year for two years to be used as premium money in the state contest.

During 1910 and 1911 the extension workers have aided the agricultural high schools in conducting their short courses for young men and women. The demand is so great that the college and station people are sometimes urged by the school superintendents to help where there is an excess of places to be filled at one time. The work in domestic science deals with a study of foods, their use in the body, food and money value, etc., sanitation in the home, home economy, home hygiene, care of the sick in the home, home decoration, etc., with practical illustrations and demonstrations.

Special schools, such as corn schools, cooking schools, poultry schools, etc., are conducted in different sections of the state, provided certain requirements are fulfilled. These schools may be held under the auspices of any local organization or by an unorganized body provided some known reliable person guarantees a fulfillment of requirements as to number of students, place of meetings, and materials.

Demonstration or educational exhibit tents are sent to as many county fairs as is possible during the autumn. Three workers—two men and a woman—usually go with these exhibits and both explain the exhibits and give short talks on subjects pertaining to different phases of the work. They also judge all articles entered in the industrial contests.

And, last but by no means least, is the work done in the rural schools. A county superintendent may call upon the extension workers to visit his rural schools with him and give talks and demon-

strations in the schoolhouses during school hours, at some time previously arranged with the extension superintendent; in many instances these are both parents' and students' meetings. The domestic science worker takes up home subjects; different food materials, and the proper use of such materials; methods of preparation, combination, etc., illustrated by the Langworthy food charts and other convenient and useful helps. Where possible, some simple demonstration is given, showing why certain combinations of food are desirable. If one may judge by the attention given, such lessons are interesting even to the smaller children.

Simple talks on personal hygiene and its relation to health of body sanitation at home and at school, its relation to clean air, pure water, pure food and wholesome lives, are given. These are also subjects which appeal to both parents and students.

The warm lunch in rural schools—how it may be prepared and served, and its effect upon the comfort and well-being of the child —has been discussed, and seems in most cases to receive the approval of the parents. A number of teachers are trying out the plan as suggested in the bulletin issued by the extension division last fall, and with encouraging success in most cases. So simple a thing as corn meal gruel may not only serve as part of a noonday school lunch but also suggest a lesson in domestic science in schools and be discussed and used to good purpose at home. Any one wishing this bulletin (Extension Bulletin 19), which contains other suggestions on this line, may receive it by addressing the Extension Division, University Farm, St. Paul, Minn.

It is our hope and belief that some such work, carried on in the one-room rural school, may lead to a still greater interest in and study of all these most important subjects, subjects which have so close a relation to the healthy, physical, mental, and moral development of the race, and which, if thoroughly understood, would aid in placing home making on a level with other professions. The rural schools of Minnesota, though in many places small and poorly housed, have a large and important part in our plan for extension work.

THE DOMESTIC SCIENCE DEPARTMENT AS A SOCIAL CENTER OF THE SCHOOL.[1]

BERTHA M. MILLER AND VIOLA M. BELL.

James Millikin University, Decatur, Illinois.

Both in aim and method, the present tendency in education may be said to be predominantly social. Contemporary educators, by continued emphasis on the socializing purposes, are bringing this fact clearly to the foreground. With the growth of this tendency there has developed an appreciation of the school as a social unit in the community. As a still further development there is now felt a distinct need of a social center within the school itself. The scope of this paper will be limited to a few suggestions upon this specific problem.

The school is a community within itself. It may be described as a social unit—a place where the mingling of the students with each other can be made of great value. The importance of this phase of school life is stressed by practically all writers on education today. To quote from several typical articles:

> The primary aim of the public school is not to promote academic training, but to enable the pupil by means of a free, fair, and general social intercourse, under the leadership of friendly and large spirited men and women, to obtain practice in real life, to become socially and serviceably efficient.—*A. D. Call.*
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> Children from all classes and elements in life meet together on a common basis. . . . . In reality they will get more than anything else, the results of the play of life upon life, as they mingle with teachers and schoolmates in the varying activities of the school.—*H. A. Hollister.*
>
> The school is another form of social life . . . . It is emphatically a social institution . . . . The object is to socialize the youth and to fit him to take his place in society and to render the best service of which he is capable. *S. T. Dutton.*

This "social intercourse" may be gained not only through the subjects already included in the curriculum but also through the introduction of subjects of distinct social value. The former, however, are too vague to have any direct bearing upon social development and the latter are limited in their influence to the members of the classes. If this training is so essential, let the social life of the school be consciously developed and definitely organized; or as H. Woolston expresses it: "Under the control of the school there ought to be provided ample opportunity for purely social recreation. I would advocate, to be

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

explicit, the introduction into the program of the school of regular social occasions at stated and reasonably frequent intervals."

The association of an individual with the members of his own school group gives a certain degree of confidence which may be lost when he comes in contact with another group. His social horizon therefore should be widened by bringing together as many groups as possible upon these social occasions. R. P. Halleck in discussing the social side of high school life says: "Varied ways of developing social activities must be devised." One of the easiest and most natural outlets for this life is through the domestic science department, as both subject matter and equipment are social factors. The use of the rooms and equipment by different groups of pupils has already been tried by several schools with successful results. The arrangement of the furnishings of the room itself and the association with the subject matter, so predominantly social, aid by supplying the right atmosphere for all kinds of functions.

Not only from the purely social but also from the economic point of view should this department be used by all members of the school community. The installation of the equipment requires the investment of a large sum of money. Society demands that every investment should yield as large returns as possible. As H. Woolston says:

> We must turn to the school in order to find an agency that can consistently and comprehensively instruct our coming citizens as to the privileges and responsibilities of social life. From the standpoint of economy it has seemed wasteful to erect at great cost a building that can be used for only five hours a day during five days in the week for nine to ten months in the year. As fitting monuments for civic enterprise they should yield a larger utility in proportion to the funds invested.

By centering the social life around the domestic science department and by using the equipment for these important social activities much larger returns will be received for the sum expended than from that which is given by the regular class work in the department.

Both the methods by which the social life of the school may be developed through this department and the efficiency of the methods will depend upon the good management of the domestic science teacher and the coöperation given her by those supervising the social activities.

In brief, realization of the social value of education has brought to light the fact that the pupils must receive training in social life during the school hours. The school as a social unit should afford some definite medium for the expression of such life. As the domestic science department is social in subject matter and can furnish the means for carrying out these activities, it should be the logical social center.

PRACTICAL METHODS FOR TEACHING THE NUTRITIVE VALUE AND COST OF FOOD.

HELEN MARION DAY.

Bradley Polytechnic Institute.

One of the chief difficulties in making the subject of nutritive value and cost of food of real practical value to a student is the general lack of facilities and opportunity for continuous work in the giving of meals. The preparation and serving of an occasional isolated meal is valuable chiefly as practice in cooking various foods whose relation to each other must be considered in several aspects, and in appropriate methods of table setting and service. Even when the dietary value and the cost of such meals are carefully worked out the results are far from practical or convincing, for the very obvious reason that conditions are artificial. I do not wish to undervalue such work when conditions are such that nothing more can be done, yet a year's experience with a practical house where the actual conditions of family life are met by the students has made me very enthusiastic in advocating such a method as extremely practical and valuable.

For such practice we have a house near the Institute, the four first-floor rooms being fitted up as living room, bed room, dining room, and kitchen, with a laundry in the basement. Here all meals and housework lessons are given for the high school as well as for the college students Owing to limited time we have not yet been able to have the high school girls do any more in giving of meals than they did under the old conditions of the cooking laboratory and practice dining room, but the conditions being more like those of the home, the work seems to be more practical even for them.

The college students have the dietary work in the winter term of the second year. They have had chemistry, bacteriology, one year of cooking, a term of food study immediately preceding the work in dietaries, and are taking at the same time a course in physiological chemistry.

For the practical course in meals the class is so divided that groups of three are formed, and each group serves three meals per day for three days, alternating the duties of hostess, cook, and waitress. Owing to the necessity of keeping up the regular school work at the

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

same time, a group can not work three consecutive days, but one day a week or in two weeks according to the number of groups in the class. The meals, however, are given consecutively by the various groups, five days per week. The family served consists of members of the faculty who are glad to pay for the meals thus furnished at the rate charged at boarding houses in the vicinity. We try to have a "constant" family so that the food requirements may be unaffected by differences in conditions.

The money paid in constitutes the fund used by the students in making their purchases, all the marketing being done by the persons acting as hostesses for the week. In planning the menu for the week the various groups consult in order to have the best arrangement of food values and also for economy in marketing and using left overs. Each group begins serving at the noon meal so that the breakfast may be planned for and even started the night before.

The working out of the dietary for the three meals is done by the hostess for the day, this work being facilitated as much as possible by having standard recipes worked out in advance. The hostess is also responsible for all reports for the day and expenditures of money. The cook does the main part of the cooking for the three meals, but is assisted in the preparation of salads, desserts, etc. We try to have certain duties devolve definitely upon certain students and at the same time encourage the "good team work" so important for the success of such a plan.

Each day the value of the food eaten is compared with the standard selected and at the end of the week the average is again compared with the standard, discrepancies discussed, and suggestions made for adjustment.

The cost of food for the first set of meals is not limited, ordinary economy in choice of food being exercised. With the food value and cost of the first set of meals as a basis, the remaining meals are arranged to meet the standard as nearly as possible with as much variation in cost in a descending scale as may be inflicted without protest upon the family.

This practice in serving meals was followed by some five o'clock teas by the students in groups of four to invited guests chosen from the junior class and women members of the faculty. Here the dietary value was worked out, but more elaborate dishes being constructed and more expensive material used, the cost of food and value of labor in its preparation was emphasized This practice in another form of serving and in dispensing hospitality was also valuable to the girls.

One other experiment that we tried last year was in connection with a course in large quantity cooking in the spring term of the second year. When the class was small all such practice could be given in our lunch room kitchen, but last year it was necessary to provide extra work. We let it be known among the housekeepers in the neighborhood that we would do cooking to order on certain days in the week. The orders came in abundantly and the results were most satisfactory. The girls took great interest and pride in the work, and not only gained greatly in proficiency in handling food material in larger quantities than in the ordinary cooking class, but also learned a great deal about what constitutes a saleable article. The cost of the food material, fuel, and time was calculated and the total compared with the price of similar foods for sale in good bakeries and the Woman's Exchange, thus setting the girls thinking about the trade element of our work. This is a valuable basis for good judgment in buying and awakens an interest in the work of the world.

OPPORTUNITIES FOR TEACHERS AND SPECIALISTS IN LAUNDRY WORK.[1]

L. Ray Balderston.

Teachers College, New York City.

The training of women as specialists in any field is followed by its growth eventually in all lines that represent economy of time, labor, material, or money. Our domestic science schools are training women as specialists in various household lines, but very few are today providing specialists for the laundry, although this is one of the largest problems of the household and one of the important social, economic, and sanitary questions of the day. Science verifies the claim made from the standpoint of cleanliness; popular verdict says that trained people are necessary for the best results. There is a demand today for trained teachers to carry on educational work in the laundry field, and persons who are looking for possible fields of service will do well to consider this one.

We have been considering the laundry course as a branch of domestic science, yet here is really a field of instruction and a profession which is competent to stand by itself. The time has come when

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

trade schools need teachers of laundering; when classes of working women and girls need instruction in methods of household laundering; when hospitals, schools and colleges need superintendents for their laundries; when commercial laundries need efficient heads.

This suggestion is offered by one who is teaching classes in home and institutional methods of laundering, the students of which are training for home duties, for teaching, and for institutional supervision. Domestic science teachers are already legion; trained superintendents more numerous than formerly; but we cannot begin to supply the demand for efficient teachers and supervisors in this field of laundering. The demand comes from all parts of the United States and for various kinds of positions. The following examples have recently come to my attention: A superintendent for a laundry in a hospital is wanted; a laundry instructor in a trade school for girls; a superintendent of a commercial laundry; a manager in a coöperative effort; an instructor and manager in an Alaskan school. In all these cases ability in both domestic work and machine work is needed. We have no one to send, because in all cases the training in laundry work thus far has been as a branch of other departments and not with the idea of specialization.

Besides courses in domestic and institutional laundering, there is offered in Teachers College a certificate laundry course. This is a one-year course, admission to which requires high school graduation only. It is planned to give training not only in hand and machine work, but also to include allied courses in bacteriology, chemistry, textiles, etc., which will make for a broader, fuller equipment.

NOVEL COURSES AT MECHANICS INSTITUTE.[1]

HELEN HOLLISTER.

Course in Lunch Room Management.—Repeated demands for women capable of managing lunch rooms or cafeterias led Mechanics Institute in 1907 to offer a practical one-year course of instruction along these lines, with its own students' lunch room as the basis of operations.

The minimum age limit for applicants was fixed at twenty-five years, and although at first occasional exceptions were made to this

[1] Presented at the Washington Meeting of the American Home Economics Association, December, 1911.

rule, it is now rigidly regarded, a certain amount of general experience and a mature judgment being deemed essential preparation.

The first class had four members. The present class has the maximum number, sixteen, while in the 4 years forty have completed the course.

The practical part of the instruction is given by Miss Anna M. Stubbs, a graduate of the normal course in domestic science. Under her direction the members of the class plan suitable and economical menus, working out the cost, and preparing, cooking, and serving luncheon to 200 students five days in the week. Each one in the class in turn takes entire charge, including the ordering of supplies and directing the work of others.

Additional experience is gained in the institute restaurant where 500 people are served daily. Here practice is had in the making of bread and pastry and the cooking of meats and vegetables for three meals each day. Other practice work is gained through the planning and preparing of teachers' luncheons at some of the city schools and of suppers for church societies, while through the coöperation of various local lunch rooms fine opportunity is offered for observation work.

The weekly schedule also includes lectures on food values, on hygiene, on house construction and sanitation, and on emergency nursing; lessons in business methods and book keeping, in laundry work, in marketing, in general care of the house, in fancy cooking, and in textiles and sewing as applied to the selection and care of household supplies.

A fine, intelligent class of women has taken up the work—trained nurses, housekeepers of experience, business women, and teachers. One young man entered the class last year, and proved himself so capable that he was retained by the institute as assistant manager of the lunch room and restaurant.

Others who have received certificates of graduation are scattered far and wide, acting as housekeepers, or managers of lunch or tea rooms in Christian Associations, high schools, department stores, and factories in a number of cities representing almost as many states.

The course has more than proved its importance and is regarded by the directors of Mechanics Institute as one of the most practical and useful established during its twenty-six years of existence.

Course in Infant Nursing.—In January, 1911, representatives from the Infants' Summer Hospital of Rochester, N. Y., and from the domestic science department of Mechanics Institute met to plan a

course of instruction in the care of children—the institute to give the theory, the hospital the practice. The product of such a course was expected to be a superior grade of nurse, capable of caring for children in an intelligent, scientific way—an important factor in the work of reducing the rate of infant mortality.

The course materialized in March, the institute offering it in the spring term. The three months of study were then followed by two months of hospital experience.

Candidates were required to be sixteen years of age or over with a love for and a knowledge of children and at least a grammar school education. Of the seven women who formed the class the youngest was twenty-one and four were high school graduates—most satisfactory material.

By lectures, discussions, and laboratory work the class was taught the importance of cleanliness, fresh air and proper diet. Lessons in food values were closely correlated with laboratory work, ranging from the care and preparation of milk to the cooking of a simple meal for a child of five.

Instruction in sewing included the making of a complete layette as well as the mending and care of children's garments.

Each week a talk was given by some prominent physican on such subjects as the care of the eyes, of the nose and throat, and of the skin; the diseases of childhood, etc.

Field work included visits to the city kindergartens for observation in the amusing of children and to the orphan asylum for experience in bathing infants.

The three months of study ended in June, and during July and August the members of the class put their instruction to practical test at the Infants' Summer Hospital on the lake shore, a few miles from Rochester, with great benefit both to themselves and to the hospital.

Although it is too soon to testify as to the independent worth of these young women, the course was considered thoroughly successful and the course is being repeated this year. An effort will be made to arouse a more general interest and to induce young mothers to attend at least a part of the lectures.

THE GRADUATE SCHOOL OF HOME ECONOMICS.

Under the Auspices of the American Home Economics Association.

Fourth Biennial Session, Michigan Agricultural College, East Lansing, Mich., July 1-26, 1912.

The fourth biennial session of the Graduate School of Home Economics is to be held at East Lansing, Mich., during the four weeks of July 1-26, in connection with the Graduate School of Agriculture. The extension of the time from the two weeks of former sessions to four weeks has made it possible to arrange for laboratory courses in addition to the lectures and conferences.

Two laboratory courses are offered, each extending through the four weeks and occupying two hours a day. Food microbiology given by Professor Otto Rahn of Michigan Agricultural College, will be limited to a class of twelve, and demands a prerequisite of general bacteriology. Professor Kedzie of Michigan offers a course in chemistry in which special problems will be studied. Students registering for this course must offer general chemistry as a prerequisite.

The first week of the school will include lectures on nutrition by Prof. H. C. Sherman of Columbia; on the principles of jellymaking by Prof. N. E. Goldthwaite of the University of Illinois, and lectures and laboratory demonstrations on the chemistry of textiles, by Dr. J. Merritt Matthews of New York City.

During the second week, Dr. L. B. Mendel of Yale University will lecture and conduct a conference on nutrition, and Dr. Sophonisba Breckinridge of the University of Chicago will lecture on social economics.

The third week includes lectures on the physiology of the cell by Dr. C. E. Marshall of Michigan Agricultural College,; lectures on costume design by Professor Carr of the Univeristy of Missouri; and two lectures by Prof. Amy Daniels of the University of Missouri. A series of laboratory lessons in food will be taught and discussed by Prof. Agnes Hunt of Michigan Agricultural College.

During the fourth week Miss Grace Smith of the Technical High School of Springfield, Mass., will lecture on industrial history in relation to the teaching of textiles. Dr. C. F. Langworthy, Professor Hunt, and President Isabel Bevier, will also lecture during this week.

Several conferences will be arranged during the session.

Requirements for Admission.—In conformity with the Graduate School of Agriculture a college degree, or recommendation from the school of graduation or the faculty with whom associated, will be required of those registering as students.

Expenses.—The matriculation fee is $10 and this will admit a student to both the Graduate School of Home Economics and the graduate School of Agriculture. No laboratory fee will be charged.

Board and room may be obtained in the vicinity of the college for from $5 to $7 a week. A list of suitable boarding places will be kept in the office of the registrar for the convenience of students at the Graduate School.

Correspondence.—All correspondence relating to membership in this school should be addressed to Mr. A. M. Brown, Registrar, Michigan Agricultural College, East Lansing, Mich.

ALICE P. NORTON, *Chairman.*

FIFTH SESSION OF THE GRADUATE SCHOOL OF AGRICULTURE.

The fifth session of the Graduate School of Agriculture will be held at the Michigan Agricultural College, East Lansing, Mich., beginning July 1, 1912, and continuing four weeks.

Only persons who have completed a college course and taken a bachelor's degree will be admitted to the privileges of the school, except that admission may be granted to non-graduates who are recommended by the faculties of the college with which they are associated as persons properly qualified to profit by advanced intruction in agriculture.

Instruction adapted to the needs of graduate students will be given under the general heads of soils and plant physiology, animal physiology, agronomy, horticulture, animal husbandry and poultry, rural engineering, rural economics, and farm management.

A prospectus giving a complete schedule of courses and instructors and other information will be issued later.

A. C. TRUE, *Dean.*

THE ALCOTT HOME AT CONCORD.

To those who like to trace the development of the Home Economics movement in the United States and all that it implies, the practical experiments in communal living of the New England Transcendentalists, with their desire to put material things into the background and practice" plain living and high thinking," constitute an interesting chapter.

When these ideas were carried out at Brook Farm and at the Alcott Home in Concord, Mass., one recalls that Mrs. Alcott had many difficulties to overcome in carrying out her husband's theories of diet, and one hopes that the consolations of philosophy were an adequate recompense.

The Alcott home calls to mind also one of the most interesting experiments in the education of young children. How much Bronson Alcott's ideas of teaching young children by conversation rather than through books has influenced views of later educators it would be hard to say. At any rate, in the Alcott home grew up a wonderfully interesting family.

For this and many other reasons interest attaches to the following quotation which recounts a worthy union of women's club work with the preservation of a literary shrine and the inauguration of a philanthropic enterprise.

A movement inaugurated by Mrs. Henry C. Rolfe, president of the Concord Woman's Club, enlisted a committee to solicit funds from Louisa M. Alcott's admirers all over the country, and the enterprise was taken up so enthusiastically that although small subscriptions were received, they were so numerous that more than $5000 was accumulated. The house has been acquired by the committee, and the repairs, apparently the first in about two hundred years, have already redeemed the place. The leaks have been stopped, and there is no longer any danger of the roof tumbling in. The four rooms especially associated with the writer and her sister, May, the artist, will be reserved for public inspection. Visitors will read over the mantel the inscription suggested to Mr. Alcott by Ellery Channing:

> The hills are reared, the seas are scooped in vain
> If learning's altar vanish from the plain.

The decorative drawings with which May Alcott relieved the utter bareness of the ill-furnished home—the figures on the woodwork, the Greek gods on the window casings, the painted nasturtium vine, and the little brown owl, memorial of the family of wisdom's birds which Louisa Alcott so loved, have been preserved. Former articles of furniture associated with the family have begun to find their way back to their old home—the piano and writing desk, a mirror which if it could reproduce what it has seen would be an amazing moving picture show, and various manuscripts.

But the big old house is not to be devoted wholly to a shrine of pilgrimage; the other rooms will receive house delegations of working girls during their brief summer vacations. This seems to be a most admirable memorial to a family whose ideals were certainly altruistic.

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MARY D. S. ROSE.

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ADDRESS OF WELCOME TO THE ASSOCIATION.[1]

P. P. CLAXTON, D. LITT.

U. S. Commissioner of Education.

Madam President, Ladies, and Gentlemen: I regret that I have not had an opportunity to be present at the meetings in which you have been participating. It was with great pleasure that I accepted the invitation to welcome you to this city because I believe you are working at a vital problem of education. I have, however, no definite knowledge of your work, and can, therefore, say only a word about the place it should have in a general scheme of education.

Education must come out of the life of the individual. It is not a thing to be brought down out of the heavens or imported from the ends of the earth. It is not something foreign to be rammed down throats of children nor with which they are to be clothed. It must come out of the life of the individual. It is only an uplifting, an outsifting, a refining, an organizing, and an interpreting of the life of the individual. This applies to the education of a people, or a race as well. In a people's own life we must find the elements to be used in its education. Froebel was right when he brought into the kindergarten the things familiar to the children in the villages of the particular part of Germany in which he lived. A kindergartener in a school for Indian children which I once visited was wrong when she tried to use Froebel's German material and then complained because the little Indians were not interested. While she was complaining to me, these children were having a great time with their blow guns. I said to her, "Why not catch the spirit of Froebel and do as he did. Why not use the material about you, that appeals to the experiences, the life, and the interests of these children, lifting up these experiences into consciousness, and giving to each individual experience its universal consecration?"

Stanley Hall has called our attention to the application of this same principle in dealing with primitive peoples and foreign civili-

[1] Delivered before the Washington Meeting of the American Home Economics Association, December, 1911.

zations. It is a principle the missionary must learn. Paul was right when he did not try to impose on the Gentile converts to Christianity the things of Judaism, however important these may have been to the Jewish converts. In the fullness of time, out of the life of a people, possibly under the impulse and inspiration of a sympathetic teacher, must the higher ideal and a new system of thought and action ripen. It must come as an uplifting, outsifting, refining, organizing, and interpreting of the best of their own lives. If our modern missionaries could be as wise in this as some of the ancient missionaries were, we probably would make greater progress in the education and conversion of peoples with whom they are laboring so zealously.

The principle is the same in regard to education of children in the country and in the city. Hence the increasingly insistent demand for a differentiation in the work of the schools in the country and the city. It is not sufficient merely to establish a city school in the country. It does not fit.

I think the principle also holds in the education of the sexes. The interests of men and women differ broadly, as do their experiences. From the earliest times and among people of all grades of civilization, women have been interested in the things pertaining to the home and to life. According to Bernard Shaw men are interested in activity; women in being. Men are interested in producing the necessities of life; women in their proper use. Men are interested in the external circumstances of life; women in life itself. The interests of women center in the home and in the family, the fundamental social institution. She, therefore, has been and is the leader toward ever higher stages of civilization. She bears the torch of life. *Das ewig-weibliche zieht uns hinan!*

Now if girls are interested chiefly in the things of the little world of the home and the right use of the products of the labor of their brothers; if these things enter most largely into their experiences while boys are interested in and have experiences with things and activities of the greater world of the outside, then there must be a differentiation in their education. This must be so for development and culture as well as for practical utility. Pestalozzi was accustomed to say that he would turn the car of education around; that he would make the people intelligent about the life they must live. For him education consisted largely in an interpretation of the daily activities and the every day interests of the people. He was right. Women are interested in the home and its furnishing, in food, clothing, and shelter,

They spend most of the money, four-fifths of it I have seen stated somewhere. Their life is in the home; their interests are there and their affections. Hence out of the home and its activities and interests must come the materials of their education, and it is chiefly about the life of the home that they must be made intelligent.

I admit this does not apply with equal force to all women. Some there are whose interests are not centered so fully in the home and its economies. Doctor Chappell, a former principal of a school for women in Georgia, was right, however, in the main, when he divided all girls into two classes, Shakespeare girls and pie-crust girls. The division is certainly not bad. If both classes of girls were brought into the school, I think the pie-crust girls would seem much the larger class. The Shakespeare girl will profit most by the study of Shakespeare and what Shakespeare symbolizes. Something of the pie-crust studies will be helpful to her, no doubt, but she will profit most by a study of literature, history, mathematics, art, and music. In these she will find her chief joy; and most profit comes in education, I am sure, where most pleasure is taken. The growth of the spirit is always accompanied with joy. Where there is no joy, there is no growth. There is little of value for education in work done without interest and only because it is required. This applies in schools of all kinds, from kindergarten to college.

The pie-crust girls will profit most by what my friend symbolized by pie crust. They are not interested in literature, music, mathematics and art. They are not capable of abstract thinking as the Shakespeare girls are. The school should help them by making them intelligent about the things in which they can be interested. It should give them such instruction as will serve to intellectualize the work of their daily life in the home. We need a new definition of liberal education. We need to understand it as being that education which renders the worker free in his work, freeing him from the slavery which comes from ignorant and unintelligent imitation and enabling him to coöperate intelligently with the great laws of nature and make them his servants in carrying out his good will toward his fellow men. We also need a new definition of culture, that deepening, widening, refining, uplifting of the soul that comes only from living and laboring with strong purpose and good will for one's fellows. That education is most humanistic that appeals most directly and most intimately to the ordinary daily human interests. Rightly taught the science and the art of home making must rank very high in this regard.

As a second principle, the work of the school, if it is to be of most value, must be closely related to the contemporary out-of-school life of the individual. Most children in school and in college live a double life, a kind of Doctor Jekyll and Mr. Hyde life. When the school door closes, the school interests are left there. School and home have each their own interests, with too little relation of the interests of one to those of the other. This condition can not produce the best results. The school life should parallel more closely the best of the out-of-school life and the interests of the home. When Luther made his plea for education of all the people, he said he did not expect that all the children could or would go to school all the time. He expected they would go to school two or three hours in the day, that they would work with their parents the remainder of the time at useful occupations, and in helping to make their living. I think he fully realized not only the practical need of the work of the children, but its educational value as well. There is in this at least a suggestion for a wholesome reorganization of our school system. If children could attend school two or three hours a day three hundred days in the year and work at suitable occupations the rest of the day, it would easily be possible to prolong the years of their school life through the period of the high school and well on into the years of manhood and womanhood. The school would then offer an opportunity for a continuous interpretation of the experiences of daily life, and the daily life out of school would likewise furnish an opportunity for the application of the principles learned in school. There would then be a constantly increasing and developing interest in the work of the school and an ever-increasing zest in life.

Our present practice of trying to carry the school life in advance of real life and of the natural development of the child is artificial and ineffective. Doctor Solamon of Nääs, Sweden, one of the few philosophers that it has been my privilege to know, once said to me, "Did you ever think, Mr. Claxton, to what extent we put the cart before the horse in education? Children are active. Reflection comes only in later years. We seat children in the school room and require them to reflect on general principles. When they are just beginning to arrive at the years when reflection and understanding of principles are possible, we send them out to active life, where they do not have time to reflect." He thought the process should be reversed, to some degree at least.

Experience must furnish the concrete raw material for the education

of each individual, and not all this experience can be had in the first fourteen years of the child's life. In Goethe's *Wilhelm Meister*, you will remember, when Meister asked Arno, who was constantly twitting him with his lack of experience, "What experience is," Arno replied, "Experience is experiencing how other people experienced when they experienced their experiences." No one individual can experience for another, except in so far as he may be able to apperceive the experiences of the first through more or less similar experiences of his own of which he has become conscious through partial interpretation, at least. Therefore, the richer the experiences of the individual, the more the school will be able to do for him. The more the school life is prolonged and the more active and real the parallel life out of school, the better will be the results. The natural home life and the ordinary occupations of girls out of school should determine largely the character of their school work, and the school work should in so far as possible interpret for them their life experiences.

Schools have always been vocational. Vocational education is no new fad. When only one boy out of ten and one girl out of a hundred went to school and these came from homes of culture and refinement, the work of the school was adapted to fit them for the occupations which it was supposed they would follow when they became men and women. Since it was quite certain that most of them would become ministers, lawyers, physicians, doctors, politicians, authors, or gentlemen and ladies of elegant leisure, the work of the schools was adapted to fit them for these occupations. Now, when all the children of all the people are crowding into the schools, we must vary the work to meet their various needs and the many occupations in which they will spend their lives. I hope the time may soon come when all will have some leisure, enough to enable them to reflect on the great verities of life and to acquire for themselves something of the sweetness and light which can come only with a reasonable amount of leisure. No country can afford to have a laboring class of people who labor all the time, nor a leisure class of people who are idle all the time, even to the extent of being relieved from all forms of productive labor. Athens tried it. She reached a glory of attainment which few nations have ever reached, but her beautiful civilization grew out of the dung heap of humanity rotting beneath. The result we all know.

Into the education of every individual there must come some of the elements that appeal to the imagination and finer emotions, some of the things that touch the heart and refine the life. For all there

must be something of art and literature. All must have their minds more or less actively trained in the beginning at least of abstract thinking. The first occupation of all is manhood and womanhood, into which the elements of humanity must enter. The second is citizenship, and all must have the preparation which will enable them to perform the duties of citizenship and assume its higher responsibilities. In these respects and to this extent the education of all must be more or less alike. Beyond this the education of each individual must be determined largely by the vocation in which that individual is to make a living and serve his fellows. Whatever is needed to be done in the city, the state, and the nation for its welfare must be taught in the schools to those best fitted by nature to do this service, unless it can be taught more effectively and with less cost of money, time, and energy somewhere else.

This principle applies, I think, in the education of girls, and since most of them are to be home makers and mothers of children, their education should fit them for these occupations. Had I the making of schools for girls, I would make domestic science and Home Economics the heart and center of the whole work. All other subjects I would bring into vital connection with these in such a way as to make them more intelligent and to lift them as far as possible into the sphere of the fine arts.

I am in the fullest sympathy with your work. As Commissioner of Education, I am asking the present Congress for money enough to enable us to employ in the Bureau of Education a group of four or five women to help work out some of the great problems of education for home making, especially in the high schools and colleges of the country. If Congress responds to this demand, we shall be able to help you more at your next meeting, and we shall also be able to send, at your request, experienced women to assist in reorganizing the schools and establishing courses of study in home making in various parts of the country.

Because you are working at this most vital point of all the education of the country, to make people a little more intelligent about the home, about the expenditure of money, and the preservation and ennobling of the life which centers about the home, I welcome you to the city of Washington, and bring to you the greetings of the nation and wish you the highest degree of success in your great work.

EDITORIALS.

Graduate School of Home Economics

The Graduate School of Home Economics is one of the most important undertakings which the Association has in hand, and one which ought to have the support, not alone of the members of the Association as individuals, but of the universities, colleges, and other institutions which teach Home Economics. Its purpose, in short, is the advancement of the grade of instruction offered in such institutions by bringing together, for special training under university teachers and investigators of national reputation, those who are now teaching.

The Graduate School of Home Economics, like the Graduate School of Agriculture, has been devised as a special tool for a special purpose. Both sciences are new, and progress in each will be determined quite as much by the ability of those who are now teachers to keep in close touch with advance in their science, as it will by the training of new teachers. For a number of years now, at biennial periods, the workers in these two fields have come together and placed themselves under the instruction of those who are on the very frontiers of knowledge. The first graduate school of Home Economics was organized by Professor Atwater at Wesleyan University, and had the coöperation of Mrs. Richards. Successful schools have since met at the University of Illinois, Cornell University, and Iowa State College. The meeting this year at Lansing ought to bring together a large number of teachers of Home Economics, themselves to become, for the time being, industrious students.

Federal Legislation

Six bills, some of them new forms of old ones, have been introduced into the present Congress, all proposing grants of money by the national government for education in Home Economics. One bill proposes aid to a whole system of vocational education; two other bills favor extension education in agriculture and Home Economics; another bill would establish a bureau of domestic science in the Department of Agriculture at Washington; and another would make federal grants to the agricultural experiment stations for research in Home

Economics, including both domestic science and domestic art. It is certainly significant that so many measures are proposed, in one form or another, for giving federal grants to the extension of education for the home; and it is a proof of the widespread interest in this subject.

There is little probability that any of these bills will be passed at the present session of Congress, and many who are most interested in the subject feel that this fact is not to be wholly deplored. Those who agree on the importance of this branch of instruction, but who look upon it from different view-points, may now have opportunity to get together and unite on a better plan than any yet proposed. The American Home Economics Association has appointed a committee on legislation from whose action we may expect sound guidance in this matter. Meanwhile all members of the Association ought to secure copies of these bills (House of Representatives Nos. 1312, 15,256, and 11,542, Senate Nos. 3, 1369), study their provisions and write approval or criticism to their representatives in Congress. Our Committee on Legislation, of which Dr. B. R. Andrews, Teachers College, New York City, is chairman, will welcome suggestions.

Administration Section Meeting in June

The annual conference of the Administration Section of the American Home Economics Association will be held at the Lake Placid Club during the last week of June, 1912. Plans are already being made for the program, which will include important papers on the organization of household labor, school lunch rooms, equipment and organization of kitchens, institutional laundries, score-cards for measuring the efficiency of employees, reports on labor-saving methods and appliances, practice fields in training for household and institution management, and probably other topics. The full program will be sent to all members of the Association about June 1. All interested are invited to attend.

NEWS FROM THE FIELD.

New England Home Economics Association.

The New England Home Economics Association has now, in its fourth year, about 175 members. Its president is Mrs. Margaret J. Stannard, principal of the Garland School of Home Making, Boston, and its secretary-treasurer is Miss Margaret E. Dodd.

Eight meetings are planned for the present winter, six in Boston, and two in other new england centers.

At the second meeting of the year, held at the lecture hall of the Boston Public Library, on November 25, Mrs. Mary Hinman Abel was the speaker, and gave an interesting and stimulating address on Efficiency in the Household. She described the modern scientific method of conducting a great industry today, and contrasted this with the unscientific method in which the average house is run. She admitted that it is much more difficult to apply modern principles of efficiency to housework than to any other industry, but suggested as a remedy for many of the uneconomic conditions now prevalent the establishment of bureaus of Home Economics in every town and city, to serve as clearing houses for ideas on matters relating to right living.

As a result, the New England Association is planning to make the beginning of such a bureau in Boston, and hopes before long to have definite results to describe.

The association is committed to the effort of establishing a permanent home, which, whether a desk with a worker behind it or a whole building, shall come to be known as a center of Home Economics in Boston, where questions may be answered, or filed for study, if no answer is known; where books and leaflets may be gathered and plans be put into shape—in short, a place to receive and transmit the vibrations which shall traverse the entire New England States, with spare-waves for the world if they desire.

Greater publicity is being cultivated through reports of the meetings in the daily papers and with the hope that in time there may be the publication in leaflet form of some of the helpful contributions from the meetings and the work of the conferences.

This year's program contemplates the establishment of (1) a direct relation between the association and the home, that parents and homemakers may contribute to and find help in the solution of their many problems; and (2) of an indirect relation in the investigation into the needs of the community and the ways in which these needs may be met in the schools.

Michigan Home Economics Association.

A meeting of the executive board was held February 24, by invitation of the secretary-treasurer, Miss Lenna F. Cooper, at the Battle Creek Sanitarium.

The institution laboratories, kitchens, and treatment rooms were open for inspection, and especial interest was shown in the X-ray laboratory, where a demonstration was given by Dr. Reed. A luncheon served in the roof dining room gave occasion for the discussion of interesting diet questions. At the executive session plans were made for the annual meeting of the association, to be held May 18,

at the Women's Building of the Michigan Agricultural College. Miss Marion Talbot, dean of women and head of the household administration department in the University of Chicago, will deliver an address. There will also be reports from committees appointed in November, 1911, on the constitution, membership, and standardization of high school and normal school courses.

Home Economics Association of Greater New York.

The first meeting of the year was held November 28, 1911, at the New York Public Library. The subject of the address was the New York Public Library, and How to Use It, by Dr. Williamson, who personally conducted the members through the library. The annual luncheon was held January 20, and was a memorial meeting to Mrs. Richards. The February meeting was devoted to a discussion of art in the home. On March 19 a meeting was held in the Manhattan Trade School, and Mr. Arthur D. Dean, chief of the division of vocational schools, New York State Education Department, spoke on Vocational Education, and Miss Florence Marshall of the Manhattan Trade School on the work of the school. The May meeting will be held at Pratt Institute, the subject for discussion being Domestic Service.

Utah Home Economics Association.

This association met at Salt Lake City, November 28–29, 1911. A report of the committee on a course of study for the seventh and eighth grades was submitted by Miss Lizzie O. McKay, chairman, and one from the committee on school lunches by Mrs. Hazel Love Dunford, chairman. Mrs. Leah D. Widtsoe discussed the Ellen H. Richards Memorial Fund, and correlation of art and Home Economics work was treated by Mrs. Virginia S. Stephens.

Scranton, Pa., Association.

An organization of the Home Economics teachers of Scranton, Pa., was effected November 19, 1911. Miss Gwendolyn Stewart was chosen president and Mr. Charles Welsh, secretary-treasurer. Bi-monthly meetings are contemplated.

Maryland Agricultural College.

An initial course in domestic science was offered to the women of Maryland, March 18–23. Among the lecturers were Dr. C. O. Appleman of the college on general bacteriology, cleaning, care of milk, and prevention of disease; Miss Frances Stern of Boston on water supply, household chemistry, and the chemistry of the laundry; Mrs. C. W. Foulk of Ohio State University on various household topics; Dr. W. L. Taliaferro of the college on drainage and disposal of waste, and Dr. M. M. Lyon on first aid to the injured. A meeting for teachers was held on the closing afternoon, addressed by Miss Emma S. Jacobs of the Washington, D. C., public schools and Mrs. H. J. Patterson.

Michigan State Agricultural College.

The annual Michigan farmers' institute round-up was held at the agricultural college the last week of February. During two days the Women's Congress held sessions for the discussion of important questions on education, health, and the household. Mrs. C. W. Foulk, extension lecturer of the Ohio State University, spoke at four different sessions on the following subjects: Economy in the Home, the Balanced Ration, Bread, and Canning of Fruits and Vegetables. Dr. Clara M. Davis, of Lansing, gave an address on Modern Medicine and the Laity, and Prof. Jessie Phelps, of the State Normal College, spoke on Civic Hygiene.

This Women's Congress was the occasion for the meeting of the Michigan joint committee of the school patrons department of the National Education Association. Four of the five members were present, representing all the affiliated organizations except one. At the same time the educational committee of the state federation conferred on possible work for the coming year.

The Home Economics division of the college entered on a revised course of study at the opening of the college year. The departments of bacteriology, physics, botany, drawing, and design continue to offer special courses for women, and new courses relating to food and nutrition are given by the chemistry and physiology departments. The work in dietetics is enlarged, as is also that in textiles and household art. The economics and sociology department is a popular one, many women students electing work in these subjects. In the freshman and sophomore years an option in music is offered—two credits per term—and the work of the last two years is entirely elective, except that in Home Economics. These technical subjects amount to eight credits a year through the first two years, and to fifteen credits, or one-fourth of the total, in the junior year. Seniors are permitted to major in either domestic art or domestic science, or they may take both, in which case half of their time is devoted to the technical Home Economics work. The remodelled domestic science laboratory with the group system of desks and the complete new equipment makes possible more advanced study in this line.

University of Missouri.

A short course in Home Economics commencing January 4, 1912, and lasting eight weeks was offered for the first time. Instruction was given in cooking, sewing, home care of the sick, laundry work, sanitation, landscape gardening, care of flowers, growing of vegetables and small fruits, butter making, and poultry raising.

Montana State College.

In the department of home science once a month the students give public demonstrations in cooking, all ladies of the town being invited. The outline shows a large and well chosen variety of topics.

School of Mothercraft.

This institution opened in New York in December, under the directorship of Miss Mary L. Read. The purpose of the school is to provide practical instruction in the home care and training of children, in eugenics, and in the problems of the family.

The plan of the school includes a kindergarten, a day nursery, a boarding nursery, and instruction for adults. Three public meetings have already been held at the school: One in December at which the speakers were President David Starr Jordan, Mrs. Frederick Schoff, Dr. John

Cronin, and Mrs. Francis Gundry of Cleveland, Ohio; and two in January, one at which Professor Crampton, and Dr. Thomas D. Wood, of Columbia University, spoke on What is Eugenics, and the other on the Social Value of Mother's Training, addressed by President G. Stanley Hall.

Seattle School of Household Economics.

An announcement has been received from this institution, which is conducted by Miss G. E. Sanders. Courses of from four to twelve lessons each are offered in elementary and advanced cookery, and special courses for sickroom cookery, courses for business women, training for maids, a waitresses and young housekeepers course, dietetics, marketing, and feeding of children.

State College of Washington.

Miss Josephine T. Berry writes as follows:

I have found here a notable opportunity. The college is large and strong. The science departments are up-to-date, and ready and very willing to help work out a strong course for our young women. My plan for a four years' course has been adopted. I can only hope it may prove to be a wise one. We are fortunate in having fine men in architecture and fine arts as well as in science. I myself am teaching physiological chemistry and dietetics.

Ellen H. Richards Research Prize.

The Naples Table Association for Promoting Laboratory Research by Women announces a prize of $1000 for the best thesis written by a woman, on a scientific subject, embodying new observations and new conclusions based on an independent laboratory research in biological (including psychological), chemical, or physical science.

The theses offered in competition are to be presented to the executive committee of the association and must be in the hands of the chairman of the committee on the prize, Dr. Lilian Welsh, Goucher College, Baltimore, Md., before February 25, 1913. The prize will be awarded at the annual meeting in April, 1913. Each thesis must be submitted under a pseudonym and must be accompanied by a sealed envelope, enclosing the author's name and address, and superscribed with a title corresponding to one borne by the manuscript.

The papers presented will be judged by a regularly appointed board of examiners, or by such specialists as they may choose. The association reserves the right to withhold the award to the prize, if the theses presented are not, in the judgment of this board, of adequate merit to deserve the award.

This is the sixth prize to be offered by the association. In April, 1911, the prize was named the Ellen Richards Research Prize in recognition of the devoted service of Mrs. Richards as chairman of the committee on the prize since its appointment in 1900. Circulars giving additional information may be obtained from the secretary, Ada Wing Mead (Mrs. A. D.), 283 Wayland Avenue, Providence, R. I.

BOOKS AND LITERATURE.

The Principles of Human Nutrition. W. H. Jordan. The Macmillan Company. New York, 1912, pp. xii + 450. $1.75.

This volume deals in a non-technical fashion with the problem of human nutrition in its scientific, economic, and social aspects. It is written in a conversational style by a recognized specialist in the field of animal nutrition, and is unique in the number of illustrations from agricultural practice. It is also one of the very few books devoted exclusively to the nutrition of the normal individual, and on this account especially desirable for the beginner in this subject.

Its purpose, as expressed by the author, is to cull out the technical facts from the large body of literature unavailable to the reader without special scientific training, and to center around these facts a philosophy of life.

Part I treats of the elements and compounds of human nutrition and the fate and function of foodstuffs in the body. It is almost inevitable that in the effort to treat so complex a subject very simply, certain facts are at different times differently emphasized and appear almost contradictory, as for example, when we read on page 5, "Just as the western farmer obtained heat by burning corn in the fireplaces, so do human beings maintain body temperature at the necessary degree by consuming food to be burned," and again on page 169, "The view is now held that all body heat is a secondary product, that combustion first supports muscular activity with heat as a waste product." There are two very unfortunate misprints in this part of the text, on page 25, where the classification of organic matter into two divisions, (1) proteins and non-proteins and (2) carbohydrates, fats, and acids is rather puzzling, and on page 34, where a column of bases is headed acids. In the treatment of the ash constituents, the importance of iron is much underestimated. None the less, this is by far the most satisfactory presentation of the fundamental facts of nutrition in any popular work.

Part II discusses the quantitative aspects of nutrition and offers many practical suggestions toward the realization of a well-balanced diet, with concrete illustrations, as on page 206, where are presented two meals of equal weight but greatly unlike in the amount of actual nutrients, or again on page 212, where two lunches of equal fuel value but very different amounts of ash constituents are given. The chapters on Food Economics and Special Dietetic Measures (food fads) are a welcome addition to the usual treatment of the subject, and the nutrition of the child is broadly treated. This Chapter (XIV) logically follows that on the Relation of Diet to the Varying Conditions of Life (XI); in fact, considerable rearrangement of the somewhat disconnected topics in this part of the book would add to its strength. The section on simplicity in diet needs to be interpreted as a plea for few dishes at a meal rather than a limitation of the individual to only two or three articles of food for a long period unless these are chosen with great discretion, so as to satisfy all the physiological requirements. In our present state of knowledge of the influence of specific foods, this is a difficult thing to do.

On the whole, this book is a welcome addition to our text-books on the subject of nutrition, and will prove of great value to the general teacher of the subject, who has hitherto been forced to depend almost entirely on pamphlet literature for the student who has not had advanced scientific training.

MARY D. SWARTZ ROSE.

A Study of Food, I. Edited by Mary P. Vanzile. *Agr. Ed. Kans. Agr. Col.*, 3, 1910, no. 1, pp. 64, figs. 10.

The eight chapters of this pamphlet, written by different persons, deal with such subjects as the definition and classification of food, inorganic and organic food substances, digestion and absorption, fats and oils, roots, tubers, cereals, fruits, sugar, starch, and green vegetables.

Food Preparation and its Relation to the Development of Efficient Personality in the Home. Laura C. Rockwood. *Pop. Sci. Mo.*, 79, 1911, no. 3, pp. 277–298.

A summary and discussion of Home Economics problems with some general deductions. "The training for educated homemakers should include a thorough knowledge of the subject of personal hygiene with its three divisions: (1) Nutrition, or a knowledge of the food requirements of mankind and the best way to provide for them; (2) environment, or a knowledge of air, soil, dwellings, clothing; (3) activity, or a knowledge of the correct proportion between exercise and rest."

What Children Should Eat. Edith Green. *Human Welfare Publications*, Southwest Harbor, Me., pp. 20.

This artistic little pamphlet will surely be welcomed by those for whom it is prepared—parents, teachers, kindergartners, and settlement workers. It is dedicated to "Mrs. Ellen H. Richards, who gave the impulse to the study of Home Science in America." What children should eat, when, how, and how much, how to choose, combine, and prepare their food are the subjects that are treated in the most terse, clear, attractive form. There are no introductions or farewells, no padding of any kind. It would be difficult to find an unnecessary word in the maxim-like statements that fill the 20 pages of this charming, quaintly illustrated booklet, and the teaching is sound. Even with the treatment of the subject What Food is Needed in Special Diseases the physician will have no quarrel.

Food and Feeding. *Brit. Med. Jour.*, 1910, nos. 2563, pp. 388–390; 2564, pp. 453, 454.

A discussion of vegetarianism, low proteid diet, and other dietary systems.

What Constitute Good Meals for the Average American Home? Elizabeth H. Patterson. *Nat. Grange Mo.*, 8, 1911, no. 2, pp. 10, 11.

In connection with this general discussion sample menus are given which show the weight of the foods selected, their cost, and their protein and energy content, as well as a table showing these factors for unit portions of common food materials.

The Food of Factory Operatives. A. Fischer. *Umschau.*, 14, 1910, no. 28, pp. 549–553.

A considerable amount of information is summarized in this general discussion of the problem of providing a suitable diet for workingmen.

Quick Lunches for Efficiency and Health. Alida Lattimore. *Survey*, 25, 1911, no. 25, pp. 1012–1014, fig. 1.

A brief account is given of methods followed in serving luncheons to large groups in schools and manufacturing establishments in Rochester, N. Y. The work has demonstrated that it is possible to suuply good food under satisfactory conditions at reasonable prices and that the enterprise can be self-supporting.

Camp Cookery. H. Kephart. New York, 1910, pp. xvi + 154, figs. 13.

The kind and amount of provisions needed in camp, cooking utensils, and similar questions are discussed and directions given for the preparation of a large number of dishes. An appendix contains data regarding weights and measures used in cookery and regarding the weight and bulk of different food products.

Manual for Army Cooks, 1910. H. G. Sharpe et al. *War Dept., U. S. Off. Com. Gen. Doc.*, 379, pp. 185, figs. 23.

Kitchen equipment and devices are described, the cutting of meat discussed, and a large number of recipes given in quantities suitable for sixty men. Bills of fare are also suggested. Special sections are devoted to field cookery and to messing troops on railroad trains. Water cooling devices, improvised filters, and the experimental fireless cooker issued by the army subsistence department are described. As a whole the book contains much data of interest to teachers, students, and institution managers.

British Rural Life and Labour. F. G. Heath. London, 1911, pp. xi + 318.

The material for this book is drawn partly from "blue books" and other official sources, and partly from the author's own observation. It describes the classification, wages, and general living conditions of rural laborers in England, Wales, Scotland, and Ireland, and gives tables of wages and food in different districts. The appendix (pp. 181–300) contains a comparison between the conditions prevalent today and those of thirty or forty years ago. No one interested in dietetics in Europe should overlook such books as this.

Diet at Wycliffe College, Stonehouse. A. Broadbent. *Veg. Messenger and Health Rev.*, 8 ser., 8, 1911, pp. 45–49.

The food served to a group of fifty boys at Wycliffe College, Goucestershire, who follow a vegetarian diet, is described and sample menus quoted. Milk and other dairy products as well as some eggs are used in addition to vetegable foods in considerable variety.

Discoveries of Social History from 1200 to 1910. *Decouveries d' Historie Sociale*, 1210–1910. George D'Avenel. Paris: E. Flammarion, 1910, pp. 334.

In this interesting summary and digest of historical data, a large amount of valuable information is given regarding living conditions in earlier times, particularly in France. Such topics are considered as wages, prices of food stuffs, domestic economy, household management, and agriculture.

The Rations of the Army of Aragon in 1285. A. Balland. *Rev. Sci.*, Paris, 49, 1911, I, no. 13, pp. 403, 404.

This article summarizes a study of the accounts of a commissary agent in the army of the king of France during an invasion of Aragon in the thirteenth century. Prices, measures. and materials are quoted. The staple items are wheat, barley, flour, bread, horse beans, peas. rice, almonds, salt pork, wine, small quantities of sugar, and oats. Portable mills were used for grinding the barley and wheat. These have disappeared from use in modern armies, as have also almonds, which were consumed in considerable quantities in the Middle Ages. Otherwise the staples of the present French army ration are much the same, plus army bread, haricot beans, salt, coffee, fresh and preserved meats, fats, condensed soups, and spirits.

Food of Patagonian Natives. C. W. Furlong. *Harper's Mo. Mag.*, 122, 1911, no. 732, pp. 813–827.

Food, shelter, customs, and other living conditions are described as a result of a personal study of the Tehuelches of Patagonia. It is apparent from the author's account that their diet consists very largely of meat, either game or more commonly the flesh of mares.

Cost of Living in Mexico. L. J. Kenna. *Daily Cons. and Trade Reps. U. S.*, 14, pp. 278, 279.

Information is summarized regarding the prices of foods and the source of food supply in Mexico.

Cost of Living in Siberia. L. Maynard. *Daily Cons. and Trade Reps. U. S.*, 14, p. 279.

Data regarding the price of provisions and family expenses are given.

Chinese Wages and Cost of Living. W. R. Dorsey. *Daily Cons. and Trade Reps. U. S.*, 14, p. 831.

This brief account contains some data regarding the kinds of food used by Chinese laborers in Shanghai. Pork, fresh and cured, ham, sausage, flour, rice, sugar, and tea are the articles mentioned.

Nutrition and Increased Cost of Living. Lichtenfelt. *Volksernährung und Teuerung*, Stuttgart, 1912, pp. 61.

This study is inspired by the increased cost of living in Germany. It includes a survey of available food materials, methods and cost of production, and causes

for increase of prices. Coöperative buying and selling, the establishment of government bureaus for the study of related questions, and international coöperation for the regulation of wages and prices are suggested as solutions of the problems raised.

Beef, Its Quality and Classification. L. Villain. *Rec. Med. Vet.*, 86, 1909, no. 23, pp. 799–812, figs. 6; 87, 1910, no. 1, pp. 26–32.

Information is summarized regarding French methods of cutting meat in connection with discussions of quality and grading.

The Frozen Meat Industry in the Argentine Republic. P. Berges. *An. Soc. Rural Argentina*, 1910, p. 65–76.

This article gives a historical account of the frozen meat industry in Argentina, the statistics of the trade, and a description of the methods of production and sanitary inspection. It also discusses the comparative hygienic and nutritive value of chilled or frozen meat as compared with fresh meat, and the advantages of an increased consumption of frozen meat in Europe.

Study of the Composition of Sausage. L. Pautet. *Hyg. Viande et Lait*, 5, 1911, no. 9, pp. 505–513.

Information is summarized regarding the method of making different sorts of foreign sausage.

American Catfishes: Habits, Culture, and Commercial Importance. W. C. Kendall. U. S. Dept. Com. and Labor, *Bur. Fisheries Doc.* 733, pp. 39.

Catfishes of different sorts are described and their food value is discussed, as well as their food habits, cultivation for market, and similar topics.

The Care of Milk in the Home. *Mo. Bull. Ohio. Bd. Health*, 1, pp. 15–17.

Simple directions are given for the care and protection of milk in homes, particularly those in which the household equipment is limited.

The History, Development, and Statistics of Milk Charities in the United States. J. W. Kerr. *Pub. Health and Mar. Hosp. Serv., U. S. Pub. Health Rpts.*, 25, 1910, pp. 1451–1467.

Statistical and other data are summarized.

Microscopical Study of Cereal Foods. W. H. Kendell. *Midland Druggist and Pharm. Rev.*, 44, 1910, no. 7, pp. 419–422; abs. in *Chem. Zentbl.*, 1910, II, no. 17, p. 1322.

An extended microscopical study of the starch and cell tissue of breakfast foods made from wheat, corn, oats, rice, and barley.

The Value of Utah Wheats for Bread Making Purposes. R. Stewart. *Deseret Farmer*, 8, 1911, no. 11, pp. 161, 168, 173.

In a discussion advocating the growing of wheats which combine yield and desirable chemical, milling, and baking qualities, data are summarized regarding Utah-grown wheats.

The Chemical Composition of Kaffir Corn. I. R. O. Baird and C. K. Francis. *Jour. Indus. and Engin. Chem.*, 2, 1910, no. 12, pp. 531–534, fig. 1.

The results of a comparative study of Kaffir corn and Indian corn are given, particularly with reference to proximate composition, the composition of the nitrogen-free extract, the value of the two grains for producing alcohol, the character of the fat and ash constituents, and the draft of the two crops on the soil. According to the authors' summary, proximate analysis shows that Kaffir corn compares favorably with Indian corn.

"Kaffir corn is more uniform than corn in composition. It is a cheap food. Alcohol and glucose can be produced cheaper from Kaffir corn than from corn if the cost of the raw material is alone considered. Kaffir corn removes a smaller quantity of the important plant foods from the soil than corn. This fact has been shown by analyses of the ash of both grains which were grown under similar conditions. The fat from the Kaffir kernel is a solid which melts at 44.2°. It should be valuable in the manufacture of soaps and fatty acid products."

The Soy Bean and its use for Food Purposes. R. Muschler. *Pharm. Ztg.*, 56, 1911, no. 41, pp. 415, 416, fig. 1; abs. in *Zentbl. Biochem. u. Biophys.*, 12, 1911, no. 4–5, p. 116.

A summary and discussion of data regarding the composition and uses of soy beans.

Banana Flour as a Food for Infants. E. Pritchard. *Brit. Med. J.*, 1910, no. 2598, p. 1145.

Data, including information based on the author's experience, are summarized which led to the conclusion that banana flour in the form of gruel or a decoction may be useful in infant feeding.

Receipts for Tomatoes, Peppers, and Cucumbers. Carrie N. Hyde. *Winthrop Norm. and Indus. Col. S. C. Bul.*, 3, 1910, no. 6, pp. 14.

A number of recipes are given.

The Preparation of Sauerkraut or Sour Cabbage. Schiller-Tietz. Abs. in *Deut. Essigindus.*, 14, 1910, nos. 48, pp. 353, 354; 49, pp. 361, 362.

A detailed description of methods for preparing this material.

The Dietetic Value of Fruit. W. R. Lazenby. *Trans. Mass. Hort. Soc.*, 1910, pt. 1, pp. 89–97.

In a summary of data on the food value of fruits and nuts the author states that he has found characteristic differences in the water content of under-developed and

well-developed fruits. "Nubbin" strawberries, "cull" peaches, and "runty" apples contained less than 80 per cent as compared with 90 per cent in fine but not overgrown specimens of these fruits. He states further that 92 per cent of water was found in fine large peaches in comparison with 84 per cent in small peaches of the same variety.

Data are also recorded for a number of sorts of nuts, regarding the number of nuts in a pound, the percentage of shell or waste and the percentage of kernel, and the cost of nuts and of the edible portion.

"It was found during the course of the investigation that with the most careful cracking of some of the larger nuts, there is a 'milling' or cracking loss of nearly 2 per cent of the total weight of kernels."

Principles and Practice of Ice Cream Making. R. M. Washburn. *Vermont Sta. Bul.*, 155, pp. 92, dgm. 1.

The importance of the ice cream industry in the United States and the possible development of this industry in Vermont are discussed, a large amount of information on the classification of ice creams and other similar topics is presented, and the results are reported of studies of ice cream making particularly under factory conditions. As a whole this bulletin presents information of great interest to housekeepers and teachers, as well as to those engaged in the ice cream trade.

Quotations from the author's summary follow:

"There are two general classes of ice cream recognized; the plain (raw), and the French (cooked custard).

"The flavor is influenced by the fat content of the cream; by its freedom from contamination of all sorts; by a low cream acidity; by the addition of minute quantities of common salt; and by the ripening or aging of the ice cream. A good body is the result of the presence of plenty of fat, but not too much; of the aging and thorough cooling of the cream; and, sometimes, of the use of filters. A fine texture is promoted by the richness of the cream; by the proper conduct of the freezing process; by the aging of the cream; and, if the goods are not to be used promptly, by the use of a gelatinoid binder. Swell (or overrun) is caused by the incorporation of air into the cream, and is affected by the viscosity of the cream; by the rate of freezing; and particularly by the length of time elapsing while the cream is dropping from 34 to 29° F.; and by the speed of the agitating mechanism. The richness or leanness of the cream within working limits has but little effect thereon; neither does the use of gelatin, gum tragacanth, or other binders. The time element in the conduct of the process depends upon the initial temperature of the cream; upon the rate of flow and the temperature of the brine; upon the proportions of salt and ice used; upon the fineness or coarseness of the fragments of ice and the particles of salt; and upon the amount of sugar used in the cream.

"Its flavor, fat content, warmth or coldness, acidity, the method of handling (separation, pasteurization, homogenization, etc.), all these have effect upon the final product. A clean cream is of course essential. Neither a very rich nor a too thin cream should be used, about 22 per cent fat seeming ideal. . . .

"A filler is used to give body; a binder to prevent coarse crystallization when held for one day or longer. Starch, flour, eggs, and rennet are used as fillers with greater or less satisfaction, generally less. Gelatin, gum tragacanth, and ice cream powders

are used as binders often with good satisfaction; but their use, though legal in Vermont, is forbidden in several States. There appear to be arguments on both sides of the question as to the advisability of the use of binders in commercial cream. The adverse arguments are that inferiority and age are thus concealed, the swell unduly augmented, the use of low grade materials encouraged, insanitary holding conditions favored, and adequate food control rendered difficult. Those advanced in favor of their use are that they prevent granulation and consequent deterioration, discourage the return and reusage of unsold goods, and assist trade regulation.

. . . .

"The reasons for, the necessity of, and the directions for modifying and standardizing of creams used for ice cream making are described and examples of the calculations given, together with tabulated matter pertinent thereto; a scheme for the simple testing of the butter fat content of ice cream is explained; a score card for ice cream judging is suggested; the method of calculating ice cream yields is reviewed; the equipment necessary for one to enter upon commercial ice cream making on a moderate scale is indicated; the profits of the industry as compared with butter making are shown; a few unsolved problems are briefed; references are made to literature which will prove helpful to operators; the scant bibliography is listed; and the bulletin is closed with an index."

A number of formulas for ice cream making are presented. The bulletin also contains a list of references to ice cream literature.

Ice Cream. A. McGill. *Lab. Inland Rev. Dept. Canada Bul.*, 218, pp. 15.

Of 125 samples examined 88 were reported up to standard with respect to the amount of fat required, namely, 14 per cent. According to the author there has been a very marked improvement in the quality of Canadian ice cream during the past two years.

The Solubility of Zinc Electroplate in Lemonade and Citric Acid Solutions. H. E. Barnard and H. E. Bishop. *Ann. Rpt. Bd. Health Ind.*, 27, 1908, pp. 254–256.

Under the auspices of the Indiana State Board of Health, experiments were undertaken to determine the amount of zinc dissolved when lemonade and citric acid solutions were kept for varying lengths of time in galvanized iron receptacles.

The results showed that the citric acid solutions were much more active than the lemon solutions, though their acid flavor was about the same. The length of time the solution was in contact with the container also exercised a marked effect, much more of the zinc being dissolved on the second and third day than on the first. Considering both lemonade and citric acid solutions, a range was noted of from 0.0815 gram zinc sulphate per 100 cc. in the case of a sample of lemonade kept in a container twenty-four hours to 3.032 grams in the case of lemonade in contact with the container for seventy-two hours. "As the dose of zinc citrate runs from 0.2 to 0.8 gram, it is evident that a person drinking an ordinary 'schooner' of this lemonade would be taking into his system a very large dose of this salt."

The state board of health accordingly issued a rule forbidding the use of zinc-coated metal containers in the manufacture and storage of acid drinks.

Commercial Food Products of Special Dietetic Value. A. De Souza Reis. *2. Cong. Internat. Hyg. Aliment. Bruxelles (Proc.)*, 1910, Sect. 6, p. 72.

This article is a protest against the unbased claims made by many manufacturers of proprietary foods for the special dietetic value of their wares, and a plea for proper official supervision of the advertisements and labels of such goods.

Some Questions of Metabolism and Nutrition. A. Gigon. *München. Med. Wchnschr.*, 58, 1911, no. 25, pp. 1343–1347.

From a summary of data and the results of his own experiments, the author concludes that he has proved with certainty that the greater part of the carbon of protein remaining after the cleavage of urea is used by the normal body for fat formation, a smaller part being used for carbohydrate formation.

The Protein Requirements; or, "Do We Eat too Much Meat?" W. Tibbles. *Brit. Med. Jour.*, 1911, no. 2655, pp. 1349–1451.

This is a discussion of current theories on the subject, supplemented by estimates of the per capita protein consumption as indicated by the statistics of food materials consumed in various countries. According to the latter figures, the author questions whether physiologists have not over-estimated the protein consumption, at least in European countries. He concludes that save for persons in the decline of life, Voit's "optimum" standard furnishes a safer guide than Chittenden's physiological "minimum."

The Purin Content of Common Articles of Food. H. D. Arnold and R. C. Larrabee. *Jour. Amer. Med. Assoc.*, 58, 1912, no. 1, pp. 18–19.

The authors summarize present day conceptions of the purin bodies as they are found in the body and in food materials with special reference to such points as concern the general medical practitioner.

Disorders of Purin Metabolism. A. C. Reed and G. B. Wallace. *Jour. Amer. Med. Assoc.*, 58, 1912, no, 1, pp. 20–25.

A discussion of current theories of normal and abnormal purin metabolism, together with the reports of tests of purin metabolism made by the authors on patients suffering with gout, parenchymatous nephritis, chronic and recurring acute articular rheumatism and syphilitic and alcoholic cirrhosis, with a case of normal purin tolerance for comparison. The effect of certain drugs, notably solurol, is also noted.

The Melting Point of Fats as it Affects the Speed with which the Stomach is Emptied. F. Tangl and A. Erdelyi. *Biochem. Zeitschr.*, 34, 1911, pp. 94–100.

Experiments were made on dogs with fats of such varying melting points as linseed oil, olive oil, pork fat, and beef tallow. In general it was determined that the speed with which the fats leave the stomach stands in direct relation to their melting point; the higher the melting point, the slower the passage of the fat through the stomach. If the fats of high melting point were warmed to from 47 to 55°

their passage was hastened. If the various fats are brought to the same degree of viscosity by changing the temperatures, they leave the stomach at the same rate of speed.

The Effect of Foodstuffs in the Causation and Prevention of Dental Caries. J. S. Wallace. *Brit. Med. Jour.*, 1910, no. 2592, pp. 617–619.

The author believes that while bacteria are the exciting cause, dental caries is due to the lodging of "viscous and fermentable carbohydrates about the teeth," and the resulting acid formed. He emphasizes the need for using fibrous foods as a means of counteracting such conditions. The diet which he considers not conducive to the formation of dental caries in children is made up of fish, meat. fruit, salads, and similar foods, while the one which he considers likely to induce dental caries consists of porridge and milk, bread and jam, mashed potatoes, and other soft foods.

The paper is followed by a discussion.

The Formation of Tartar from Products Derived from the Carbono-phosphates of Saliva. A. Barillé. *Jour. Pharm. et Chim.*, 7 ser., 3, 1911, no. 12, pp. 582–585; abs. in *Chem. Zentbl.*, 1911, II, no. 5, p. 297.

According to the author's observations, tooth powders containing weak acid, such as citric acid, benzoic acid, thymic acid, or boric acid are to be recommended for preventing the formation of tartar, as is also the use of sour fruits after meals, or water containing carbonic acid. Alkaline dentifrices, in his opinion, should not be used.

The Importance of Common Salt in Metabolism. H. Strauss. *Berlin. Klin. Wchnschr.*, 47, 1910, no. 50, pp. 2292–2295.

A digest of data on the relation of salt to nutrition, particularly with reference to pathological conditions. Such a paper is of interest as it bring together much data on the question, too often discussed on the basis of belief or opinion rather than on the basis of experimental research.

Rules and Regulations for the Enforcement of the [Florida] Pure Food and Drugs Law. B. E. McLin and R. E. Rose. Tallahassee: Dept. Agr., 1911, pp. 26.

The regulations approved June 5, 1911, are presented.

Abstract of Amended Pure Food and Drugs Law. R. E. Rose and B. E. McLin. *Pure Food and Drugs Law [Fla.]*, 1911, Circ. 1, pp. 7.

The attention of manufactureres and others is directed to the amended state pure food law.

Enforcing the Provisions of the Pure Food and Drugs Law. R. E. Rose and B. E. McLin. *Pure Food and Drugs Law, [Fla.]*, 1911, Circ. 2, pp. 3.

The dates on which certain provisions of the pure food and drugs law of 1911 became effective are stated and the matter discussed.

Inspection Work in Caddo (Shreveport) and other Parishes. *Bien. Rpt. La. Bd. Health*, 1908–09, pt. 3, pp. 7–15.

In connection with the annual health report for 1909 some information is given regarding the inspection of bakeries, the milk inspection, meat and its inspection, and the examination of a sample of meat.

Pure Food Work in Westfield, Mass. Margaret Wagner. *Collier's Weekly*, 47, 1911, nos. 23, pp. 13, 14, 22, figs. 4; 24, pp. 16, 17.

A popular account is given of analytical and inspection work carried on for a number of years largely under the auspices of the state normal school. As a result of this work a list was prepared of manufacturers whose goods were judged on examination to be free from adulteration. It is pointed out that such a list by no means represents all the manufacturers of pure products.

Simple Tests for Food Purity—What the Housewife may do to Detect Adulterations. S. L. Bastin. *Sci. Amer.*, 105, 1911, no. 20, pp. 432, figs. 10.

Some methods for detecting food adulteration are described in a popular way.

The Exclusion of Adulterated, Sophisticated, and Inferior Materials from Commerce as a Result of Strict Control of Food Supplies. A. Juckenack. *Ztschr. Untersuch. Nahr. u. Genussmtl.*, 21, 1911, no. 2, pp. 83–91.

Statistical and other data are summarized and discussed regarding the improvement in conditions due to pure food work.

Sanitation of Bakeries and Restaurant Kitchens. C. B. Ball. *Jour. Amer. Pub. Health Assoc.*, 1, 1911, no. 2, pp. 102–108.

A summary of information based on experience gained in dealing with this subject in Chicago and suggestions for betterment.

Sanitary Inspections. *Ann. Rpt. Bd. Health Ind.*, 28, 1909, pp. 353–420.

The board of health work undertaken with reference to the sanitary control of food-producing and distributing establishments and canneries is reported.

The Bacterial Condition of Protected and Unprotected Foods at Restaurants, Meat Markets, Grocery Stores, Bakeshops, and Fruit Stores. H. E. Barnard. *Ann. Rpt. Bd. Health Ind.*, 27, 1908, pp. 517–523, pls. 4.

The author concludes that foods kept in glass cases were in every case practically free from dust and accompanying bacteria, while food on exposed tables and racks was surrounded by air heavily laden with dirt and bacterial life. Cleanliness of floors and utensils lessened to a certain extent the number of bacteria present, but counters and stands near sidewalks were always surrounded with atmospheric dust and dirt. The author's studies were concerned chiefly with the relative number of bacteria found on the culture plates inoculated under different conditions and the types of bacteria were not thoroughly differentiated. "But there can be no doubt that they were varied and included both harmless and injurious forms, originating

in the manure of the streets, the spittle from diseased lungs and nasal passages, and in every other form of the waste products of men and animals."

The Occurrence and Survival of Micro-Organisms on the Surface of Pastry and Confectionery Exposed on Streets and in Public Places. E. Maurel. *Compt. Rend Soc. Biol.*, Paris, 69, 1910, no. 33, pp. 427–430.

From experiments reported the author concludes that a large number of bacteria are found in large numbers on the surface of confectionery and pastry exposed for sale without protection and that such bacteria are capable of reproduction and may be dangerous.

Ins and Outs of Eatinghouses. Cornelia G. Mather. *Ill. Agr.*, 16, 1912, no. 5, pp. 166–168.

This article discusses the general question and includes a proposed score-card for judging restaurants, etc.

A White List of Food Manufacturers. Purity is the Best Policy. L. B. Allyn. *Collier's Weekly*, 48, 1911, no. 7, pp. 23, 24, 26, figs. 7.

A "white list" is given of food manufacturers whose goods were shown at the recent pure food show in New York.

The Arrangement of the Kitchen in Institutions for the Care of Large Numbers. W. Sternberg. *Ztschr. Hyg. u. Infectionskrank.*, 70, 1911, no. 2, p. 215.

A discussion of the best arrangement of buildings with special reference to kitchens in hospitals, barracks, etc., with the general conclusion that it is advantageous to decentralize the kitchens and serving rooms, and that in hospitals the location of the kitchen should be as important a factor in determining the plan of the buildings as that of the operating room.

Heat-Insulating Efficiency of Vaccuum-Jacketed Bottles. A. A. Somerville. *Sci. Amer.*, Sup., 72, 1911, no. 1855, p. 53, dgms. 2.

From an experimental study the conclusion was reached that the highest efficiency in maintaining low temperature was attained when the layer of liquid in the vaccum-jacketed bottle was 6 or 7 in. deep, or, in other words, when the bottle was nearly filled.

Fibers Used in Textile and Allied Industries. C. A. Mitchell and R. M. Prideaus. London, 1910, pp. xii + 196 + 32, figs. 66.

Microscopical descriptions and chemical tests are given as well as general descriptive material regarding wool, silk, cotton, and other fibers in this handbook, which, as the authors state, deals with the principal fibers used in "what for want of a better term may be called the 'isolated' condition," that is, "fibers used in a more or less dissociated condition in spinning, weaving, cordage, brush making, and upholstery."

The Determination of Cotton and Linen, Physical, Chemical, and Microscopic Methods. Alois Herzog, Ph.D., Prussian Higher Textile School, Sorau. Translated by Ellen A. Beers, B.S., School of Household Arts, Teachers College. Pp. 36. Price 25 cents.

Miss Beers' translation makes available a very useful laboratory guide for college and high school teachers of Home Economics. The methods are illustrated by some two dozen photographs reproduced in half-tone illustrations and in two color prints. The methods have been used very successfully in Professor Vulte's laboratory at Teachers College, despite the handicap that the methods were available only in the German edition. Now that the translation has been made by Professor Vulte's assistant, the manual will be placed in the hands of each student. It is a first step to furnish text books for scientific work in the domestic art division of Home Economics.

Studies of the Microscopical Examination of Fibers, Particularly Linen and Hemp, for Technical Purposes. R. Korn. *Jahresber. Ver. Angew. Bot.*, 7, 1909, pp. 189–234, pls. 2, figs. 12.

Extended investigations are reported on the identification of fibers.

Plumbing and Household Sanitation. J. P. Putnam. Garden City, N. Y., 1911, pp. 718, pl. 1, figs. 652.

Historical data, theories which have to do with the general subject of plumbing, and practical and theoretical plumbing problems are discussed in this volume which represents a course of lectures delivered before the Plumbing School of the North End Union, Boston.

The Cornell Reading Courses. Lesson for the Farm Home. Household Decoration. Martha Van Rensselaer and Helen Binkerd Young. Ithaca, N. Y., December, 1911.

Another excellent bulletin in the Cornell University farm-home series, which aims to review the principles underlying the problem of home decoration. Every extension department of Home Economics teaching should keep in touch with the developments at Cornell.

Domestic Science Practice. Lillian C. Athey. Washington, 1910, pp. 82.

In this volume material prepared in sheet form for distribution and use in conjunction with lectures at the Cathedral Domestic Arts Institute and with other methods of instruction in the preparation of foods has been bound together and provided with an index.

A Syllabus of Household Management. Mary L. Furst. *Teachers Col., N. Y., Bul.*, 3d ser., 1911, no. 2, pp. 24.

This is an outline of the "course of study in household management offered in the School of Household Arts, Teachers College. This course, in itself independent, shows the bearing of many detailed courses offered by the school as far as they can be correlated and interpreted in the light of the general problem of the housekeeper."

Housekeeping Notes. Edited by Mabel H. Kittredge. Boston, 1911, pp. v + 97.

This is a series of lessons on how to furnish and keep house in a tenement flat, prepared for use in the Association of Practical Housekeeping Centers in New York. The object of the housekeeping center or model flat is to instruct the people of the tenements in the art of healthful housekeeping by means of illustrations and daily lessons. A class consists of from six to eight pupils and the work is all group work. Lessons in cleaning, hygiene, cooking, and all matters connected with the rearing of children, personal health, and the most economical use of limited means, are outlined, and a list is given of suitable furnishings for a model housekeeping flat or home for five people, with the itemized cost.

How Philadelphia Teaches Concerning Distant Countries. *Cuba Mag.*, 2, 1911, no. 8, pp. 31, 32.

An outline is given showing how the Philadelphia Museum enables school teachers to bring classes of children to see the economic products of the country about which they have been studying, and how these trips to the Museum are supplemented by illustrated lectures given by persons connected with the Museum or with the department of education.

A List of Books on Domestic Science in the Public Library of the City of Boston. Published by the Trustees, Boston, 1911, pp. 78. Price, 10 cents.

This list of books in the Boston Public Library should be secured by all interested in the literature of Home Economics. It suggests the thought that similar lists might, with advantage, be compiled of the collections in our principal public and university libraries. Such a list throws light on many interesting matters. To cite a single instance, one finds entries of the various editions of Miss Katharine Beecher's Treatise on Domestic Economy, showing that it was published originally in Boston in 1841, with revised editions in 1842 in Boston and New York, and successive editions in 1842, 1843, 1847, 1849, 1852, 1854, and 1867.

Among other lists published by the Boston Library are the two on Higher Education of Women, price ten cents each.—B. R. ANDREWS.

The Magazine of Domestic Economy. London, W. S. Orr and Company, Paternoster Row; and W. R. Chambers, Edinburgh, vol. 2, 1837.

Volume two of this early journal on Home Economics has recently come to the writer's attention. It includes articles on the ventilation of houses, family mills for grinding wheat, flower painting, cookery, reading, glass making, and the domestic economy of glass and soap making. There are miscellaneous notes on markets, literary material, articles of diet, as oatmeal for children, carving, the philosophy of toasting, vails (or gratuities) to servants, the economy of fuel, and "out of debt, out of danger." The contents of the *Magazine of Domestic Economy* show that seventy-five years ago there was a clear appreciation of the very problems which are now concerning the Home Economics movement.—B. R. ANDREWS.

Vocational Education. Peoria, Ill.: The Manual Arts Press.

This new bimonthly magazine has been established at Peoria, Ill., backed by an advisory board of thirty-three educators, manufacturers, and labor leaders repre-

senting all parts of the country, who are advocates of more industrial training in public education. The magazine is edited by Prof. Charles A. Bennett of the Bradley Polytechnic Institute of Peoria. He is assisted by William T. Bawden, Assistant Dean of the College of Engineering of the University of Illinois, Frank M. Leavitt of the University of Chicago, Arthur D. Dean of the New York State Education Department, and William E. Roberts, Supervisor of Manual Training of Cleveland. The leading article in the first number of the magazine, entitled Vocational Education and Its Future, and contributed by Edmund J. James, President of the University of Illinois, points out that vocational education is quite in harmony with the ideals prevalent today in American colleges and universities. Among the other contributions are an illustrated article on the Elementary Industrial School in Cleveland and one on sheet metal work in the Illinois State Reformatory.

Industrial Education. C. E. A. Winslow. *Health Education League Bul.*, 24, 8 Beacon St., Boston, Mass. Price, 7 cents.

This is another of the admirable Health Education Series. The waste of life on the railroad, in the mine, and in the shop is clearly set forth. Some of the topics treated are industrial poisons and their prevention, tuberculosis in the dusty trades and protection of the worker from dust, the economic value of factory ventilation, eye fatigue and eye strain, medical supervision, and workmen's compensation laws.

Studies in Economic Relations of Women. Issued by the Department of Research of the Women's Educational and Industrial Union, Boston. Longmans, Green and Company, publishers, New York City.

It is announced that this series, of which three volumes are now published, will present from year to year monographs upon the various questions involved in the economic relations of women, in their industrial employment, in their position in the commercial world, and in their professional careers. It will also include studies in comparative legislation, especially as related to women's work, in the economics of the home, and in the economics of consumption. These monographs will be largely the work of women who have held fellowships in the Department of Research, and who may also have pursued studies for the degree of Master of Arts or Doctor of Philosophy in the Department of Economics or Sociology at Radcliffe, Wellesley, Simmons, or Tufts Colleges, the Massachusetts Institute of Technology, or Columbia University, in connection with research work.

The three volumes thus far issued are as follows:

Volume I.—*Vocations for the Trained Woman: Opportunities other than Teaching.* Edited by Agnes F. Perkins. Price $1.20, net; postage 16 cents extra.

Among the lines of work discussed are civic service, social service, scientific work, domestic science and arts, agriculture, business, clerical and secretarial work, literary work, art, and special forms of teaching.

Volume II.—*Labor Laws and Their Enforcement, with Special Reference to Massachusetts.* Edited by Susan M. Kingsbury, Ph.D. Price $2.00 net; postage 24 cents extra.

The chapters of this book deal respectively with the early history of factory legislation in Massachusetts; unregulated conditions in women's work; weakness of the Massachusetts child labor laws; administration of labor legislation in the

United States; labor laws of Massachusetts, 1902–1910; and the regulation of private employment agencies in the United States.

Volume III.—*The Living Wage of Women Workers:* A Study of Incomes and Exper ditures of 450 Wage-earnirg Women in the City of Boston. By Louise Marion Bosworth. Edited With an Introduction by Professor F. Spencer Baldwin, Ph.D., Boston University. Price, $1.00 net.

The table of contents is as follows: Chapter I, Introduction; chapter II, Homes and Lodgings; chapter III, Nominal *versus* Actual Income; chapter IV, Food; chapter V, Rent; chapter VI, Clothing; chapter VII, Health; chapter VIII, Savings and Debts; and chapter IX, Miscellaneous Expenditures, including Recreation and Education.

"This material was collected through budget schedules and personal interviews. Although the investigation was thus limited in scope, it is believed that the results are fairly representative of the living conditions among working women of all ranks in an American city.

"The expenditures of the $9 to $11 wage group may be taken as representing the minimum living wage. This class stands midway in the wage scale and represents roughly the average of all women workers covered by the investigation. It appears moreover, that the average income and the average expenditures of this class approximately balance each other, whereas in the two classes standing lower in the scale there is a deficit of income below expenditures, and in the two classes standing higher in the scale a surplus of income over expenditures, according to the tabulated returns. This fact indicates that the income first becomes adequate to meet expenditures when this wage group is reached."

The Gospel of the Kingdom: Studies in Social Reform and What to Do. American Institute of Social Service. Bible House, Astor Place, New York.

Under this general title, a series of weekly lessons is being published for use in Sunday schools. The lessons are prepared under the editorship of Dr. Josiah Strong with the assistance of a national committee which includes such well known names as Dean George Hodges, Graham Taylor, and Bishop Greer. Half of the subjects announced for the year 1912 are concerned directly with the field of Home Economics. For the second quarter, the topic is Woman and the Community, with the sub-topics of Woman in the Home, Woman in Industry, and Woman's Public Activities; for the third quarter the Home and The Family, with the sub-topics, Homes or Tenements, Marriage and Divorce, and Parents and Children. During 1911 the subjects of study have included The Church and Social Purity, Immigration, The Church and the Workingman, and Dangerous and Unsanitary Occupations and Conditions. The lessons cost 50 cents a year and seem to be a wise form of study for adult classes.—B. R. ANDREWS.

List of State Directors of Farmers' Institutes and Farmers' Institute Lecturers of the United States. *U. S. Depart. of Agri.* Office of Experiment Stations, *cir. 114.*

This list will give club women and extension workers information regarding some available speakers in Home Economics.

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AREFULLY consider one important fact when studying painting problems—the durability as well as the appearance of the job will stand or fall according to the materials you use. It is therefore necessary to choose well the ingredients that go to make the paint used on or in the house.

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